

March 30, 2002

Utah Coal Regulatory Program Division of Oil, Gas and Mining 1594 West North Temple, Suite 121 0 Box 145801 Salt Lake City, Utah 84114-5801

Attention:

Ms. Pamela Grubaugh-Littig

Re:

Submittal of Annual Report for 2001, PacifiCorp, Trail Mountain Mine, C/015/009, Cottonwood Mine, C/015/019, Deer Creek Mine, C/015/018, Des-

Bee-Dove, C/015/017, Emery County, Utah.

PacifiCorp, by and through its wholly-owned subsidiary, Energy West Mining Company as mine operator, herewith submits two copies of the Annual Hydrologic and Subsidence Reports for 2001. The General Section, including all forms and activities of the above mines related to coal mining and reclamation monitoring during the 2001, including the Vegetation report will be submitted on or before April 1, 2002 (refer to Annual Report-General Section extension request dated March 29, 2002).

If there are any questions or concerns please call Dennis Oakley at 687-4825.

Sincerely,

Charles A. Semborski

Geology/Environmental Supervisor

cc:

Carl Pollastro (File)

File in:

□ Confidential

☐ Shelf 1 Expandable

Refer to Record No 00 In C/0/500/92000 For additional information

APR 0 ? 2002

DIVISION OF OIL, GAS AND MINING

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COTTONWOOD MINE C/015/019

> DEER CREEK MINE C/015/018

> > DES-BEE-DOVE MINES
> > C/015/017

TRAIL MOUNTAIN MINE C/015/009









ANNUAL HYDROLOGIC REPORT 2001

## PACIFICORP – ENERGY WEST MINING COMPANY HYDROLOGIC MONITORING PROGRAM ANNUAL REPORT FOR 2001

**APRIL 2002** 

## Submitted to:

United States Department of the Interior Bureau of Land Management U.S.D.A. - Forest Service: Manti-LaSal National Forest Utah Division of Oil, Gas and Mining

Prepared and submitted for PacifiCorp by:

**HydroResources Division** 

and

**Energy West Mining Company** 

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#### I. INTRODUCTION

The 2001 Hydrologic Monitoring Report is hereby submitted in accordance with the U.S. Department of Interior, Office of Surface Mining requirements and the Utah State Division of Oil, Gas and Mining guidelines for hydrologic monitoring in areas of and adjacent to coal mining operations.

This is the twenty fourth annual hydrologic report submitted by PacifiCorp since the report entitled "Monitoring of the Water Resources in the Mining Areas of East/Trail Mountain, Emery County, Utah" was submitted to the U. S. Geological Survey and the Utah Division of Oil, Gas and Mining in December 1977. It addresses flow observations and water quality characteristics of the water resources adjacent to PacifiCorp's mining areas in Emery County. (See Figure 1, A & B.)

Information was compiled the past year from in-house as well as from state and federal agencies and private sources as follow:

U. S. Geological Survey

U. S. Forest Service

U. S. Department of Commerce, National Weather Service

Utah Division of Oil, Gas and Mining

Utah Division of Environmental Health

Huntington-Cleveland Irrigation Company

**Emery Water Conservancy District** 

Cottonwood Creek Consolidated Irrigation Company

Information from outside agencies will continue to be utilized each year for as long as their data gathering programs continue. As a result, cooperative effort is realized and duplication of effort and expense is substantially reduced.

#### II. CLIMATIC OBSERVATIONS

In general, runoff and subsequent water supplies are a direct function of the climatic conditions in any given area. Furthermore, the significance of the weather affecting the flow characteristics of the East/Trail Mountain springs cannot be over-emphasized.

Most of the water supply in the Western United States originates in the high mountain ranges as snowfall during winter periods. Snowmelt augmented by spring precipitation produces runoff which is utilized downstream. Fall precipitation influences soil moisture conditions prior to snowpack accumulation and has a bearing upon runoff the following year.

## A. Regional Climatology

From 1982 to 1984 the Western United States, especially Utah, experienced an unprecedented wet cycle of precipitation. The pattern changed in 1985 with conditions returning to slightly above normal. During the 1986 water year, the extremely wet trend returned, and the upper Colorado River Basin experienced above average precipitation. The 1987 weather pattern changed dramatically with near normal valley precipitation and mountain snowfall much below normal. The resulting 1987 runoff was substantially below normal. The drought continued from 1988 through 1992 with runoff amounts much below normal for six consecutive years. 1993 runoff improved substantially with above average flow conditions occurring in most river basins. 1994 brought the return of drought conditions throughout the West. The 1995 through 1999 water supplies were much improved with above average runoff in Emery County. In 2000, weather conditions changed dramatically and the resulting runoff was much lower than normal. Precipitation was variable during 2001 and runoff values continued below normal though 2001

# B. <u>Local Climatology</u>

# 1. Precipitation

Precipitation in Emery County during 2001 was variable. The valley reporting station of Hunter Plant was above normal. The precipitation at the East Mountain weather station was slightly below normal, while the Electric Lake station was slightly above normal.

Precipitation amounts recorded at Hunter Plant, Electric Lake, and East Mountain for the 2001 water year (October 2000 to September 2001) will be presented since these sites include low elevation, and two high elevation observation sites in the immediate vicinity of mining activities. The values are shown in Table 1. Huntington Plant discontinued weather observations in May 2001 and will not be included in the analysis.

A comparison of precipitation for 2000 and 2001 merits consideration in this study. The intent is to develop a correlation between yearly precipitation and spring discharges on East and Trail mountains. Table 2 is a comparison of the 2000 and 2001 precipitation levels recorded at the four locations.

Tables 3, 4, 5, and 6 indicate monthly precipitation values at Hunter, Huntington, Electric Lake, and East Mountain from the beginning of operation at each site. The tables indicate monthly trends as well as the great fluctuation in yearly totals. Figure 2 shows monthly precipitation at the East Mountain site for the 2001 water year.

The correlation of precipitation levels with spring discharges will be discussed in the East/Trail Mountain Springs section of this report.

## 2. <u>Temperatures</u>

During the 2000 water year temperatures were much above normal at the Hunter Plant, East Mountain and Electric Lake. Temperatures at the Hunter Plant station were above normal for all months during the year. At the East Mountain station temperatures were above normal for all months during the year. Temperatures at the Electric Lake station were above normal except for November, December, January and July which were below normal. (See Table 7.)

A comparison of 2000 and 2001 temperatures for the four stations is addressed since temperatures also influence water supplies from year to year. Table 8 depicts the variation and compares 2000 to 2001.

#### III. DRAINAGE SYSTEMS

The surface drainage system on East Mountain is divided into two major drainages; the southwest portion forms part of the Cottonwood Creek drainage, and the northeast portion contributes to the Huntington Creek drainage. (See Map HM-1 in pocket.) The drainage boundaries, including minor subdivisions to Cottonwood and Huntington creeks, are designated on the accompanying map. The surface drainage system on Trail Mountain is totally contained within the Cottonwood Creek drainage system, with minor subdivisions flowing to Indian and Cottonwood Canyon creeks. (See Plate 7-2 in pocket.) Both Huntington and Cottonwood creeks flow out of the Wasatch Plateau in a southeasterly direction. The creeks merge with Ferron Creek to form the San Rafael River, which is a tributary of the Green River.

## A. <u>Huntington Creek Drainage System</u>

Huntington Creek is comprised of many smaller tributary streams that feed the main stream. Deer Creek, Meetinghouse Canyon, Mill Fork Canyon, and Rilda Canyon creeks are the only tributaries to Huntington Creek that emanate from within PacifiCorp's coal mine permitted area.

## 1. <u>Huntington Creek</u>

Flow data are recorded on a continuous basis by PacifiCorp at four locations; stations are located near PacifiCorp's Huntington Plant, Huntington Plant Diversion, below Electric Lake about 22 miles upstream from the Huntington Plant and Electric Lake elevations. Flow records are maintained by PacifiCorp in order to determine water entitlements and reservoir storage allocation for the various users on the river.

Table 9 shows a summary of actual Huntington Creek flows below Electric Lake and at Huntington Plant, and calculated natural flow at Huntington Plant. The calculated natural flow considers actual flow recorded at the plant, plant diversions, Electric Lake storage change, and lake evaporation. The average daily discharges for the 2001 water year (October 2000 - September 2001) at the two stations and Electric Lake storage are found in Appendix A.

During the 2001 spring runoff period (April through June) 4,424 acre feet of water was impounded behind Electric Lake Dam. During spring runoff the impoundment reached its highest level on June 4. Total storage on that date amounted to 21,035 acre feet, which is 10,209 acre feet below full capacity. Reservoir releases for fishery, irrigation, flood control, and Huntington Plant needs during the water year totaled 14,992 acre feet. The total flow of 40,090 acre feet recorded for Huntington Creek at the Huntington Plant is equal to 59% of average. A comparison of runoff values from 2000 and 2001 is presented in Table 10.

During 2001 water quality information on Huntington Creek near the Deer Creek confluence was compiled on a quarterly basis. Locations of water quality sampling stations monitored by PacifiCorp-Energy West Mining Company are listed below (refer to Map HM-1).

- a. HCC01 Above Power Plant Bridge
- b. HCC02 Below Deer Creek Confluence
- c. HCC04 Below Bridge @ Research Farm Bridge<sup>+</sup>

  \*Not listed on map due to scale.

Specific water quality constituents analyzed are shown in Tables 11, 12, and 13. Values are in milligrams per liter unless otherwise noted. Raw data is on file at the Energy West Main Office. In general, the water shows a gradual increase in concentration of dissolved minerals as the flow proceeds down Huntington Canyon.

#### 2. <u>Deer Creek</u>

Deer Creek is an ephemeral tributary of Huntington Creek and flows from the same canyon in which the Deer Creek Mine is located. PacifiCorp monitors the characteristics of Deer Creek according to the following flow and sampling schedule (see Hydrologic Monitoring Schedule Appendix N).

- a. Flow and Sampling Schedule
  - (1) Locations:
    - (a) Above the Mine DCR01
    - (b) @ Permit Boundary DCR04
    - (c) Below the Mine DCR06 (See Map HM-1 in pocket)
  - (2) Flow: Information is collected during the first or second week of each month.
  - (3) Water Quality Sampling:

Water samples will be collected and analyzed quarterly (one sample at low flow and high flow) during the first or second week of the quarter. Parameters analyzed are those listed in the DOGM Guidelines for Surface Water Operational Quality. (See Appendix N.) The program was initiated in March 1988 and will continue through 2002; i.e., June, September, and December. Field measurements including pH, specific conductivity, and temperature will be performed in conjunction with quality measurements. Quantity will be monitored monthly.

As stated above, flow information is collected monthly throughout the year with the use of two Parshall flumes. (See Map HM-1 for flume locations.) A hydrograph showing all the data collected for 2000 and 1984-1999 has been generated for each location. (See Appendix B.) The hydrographs show that the flow in the Deer Creek drainage occurred from May through November at DCR01 with peak flow occurring in June (DCR01 - 1,462 GPM). Flow at the lower two locations occurred throughout the year as the result of Deer Creek Mine discharge with peak flow occurring in May (DCR04 - 1,934 GPM, DCR06 - 1,910 GPM).

## c. Quality Information

In accordance with the Hydrologic Monitoring Plan, baseline quality analysis was performed in 2001. Baseline analysis will be repeated once every five (5) years. The results of the historical operational quality analysis are listed in Tables 14 and 15. The minimum, maximum, and mean values are given for a five-year period along with the historical results. Values are in milligrams per liter unless otherwise noted. It is apparent from historical information in the tables that the quality of the Deer Creek runoff degrades slightly from the upper to the lower sampling point. The quality of the lower sampling point is thought to be affected by the Mancos Shale which outcrops above the lower sampling location. Raw data is on file at the Energy West Main Office.

## 3. <u>Meetinghouse Canyon Creek</u>

Meetinghouse Canyon Creek is an ephemeral tributary of Huntington Creek and is monitored according to the following schedule (see Hydrologic Monitoring Schedule in Appendix N).

## a. Flow and Sampling Schedule

- (1) Location: South Fork of Meetinghouse Canyon (See Map HM-1 in pocket.)
- (2) Flow: Information is collected during the first or second week of each month.
- (3) Water Quality Sampling:

Water samples will be collected and analyzed quarterly (one sample at low flow and high flow) during the first or second week of the quarter. Parameters analyzed will be those stated in the DOGM Guidelines for Surface Water Operational Quality. (See Appendix N.) The program was initiated in March 1984 and will continue through 2002, i.e., June, September, and December. Field measurements including pH, specific conductivity, and temperature will be performed monthly in conjunction with quality measurements. Quantity will be monitored monthly.

A hydrograph comparing 2001 and 1984-2000 can be found in Appendix C. Peak flow occurred during the month of May at a estimated rate of 3,700 GPM. Base flow of 0.0 GPM existed during January through April, and December.

## c. Quality Information

In accordance with the Hydrologic Monitoring Plan, baseline quality analysis was performed in 2001. Baseline analysis will be repeated once every five (5) years. Quality sampling was initiated in 1986. Table 16 lists the minimum, maximum, and mean values for 2001 along with historical results. Raw data is on file at the Energy West Main Office.

## 4. Mill Fork Canyon

Mill Fork Canyon is a tributary of Huntington Creek and was included in PacifiCorp's monitoring program starting in 1997. Monitoring of Mill Fork is conducted according to the following schedule (see Appendix N). Mill Fork Canyon is ephemeral from its headwaters to the western border of Section 21, Township 16 South, Range 7 East, and intermittent from that point to the confluence of Huntington Creek.

- a. Flow and Sampling Schedule
  - (1) Locations:
    - (a) Above old mines MFA1
    - (b) Mill Fork Canyon Culvert MFB2 (See Map HM-1.)
  - (2) Flow: Information is collected during the first or second week of each month.
  - (3) Water Quality Sampling:

Water samples will be collected and analyzed quarterly (one sample at low flow and high flow) during the first or second week of the quarter. Parameters analyzed are those listed in the DOGM Guidelines for Surface Water Operational Quality. (See Appendix N.) The program was initiated in 1997, and will continue through 2002 on a quarterly basis, i.e., March, June, September, December. Field measurements, including pH, specific conductivity, temperature will be performed quarterly in conjunction with quality measurements. Quantity will be monitored monthly.

Flow information is collected monthly throughout the year (See Map HM-1 for locations.) A hydrograph has been generated for each location. (See Appendix D.) Both recording stations remained dry throughout the year.

## c. Quality Information

Historical monitoring data collected by Beaver Creek Coal Company - No. 4 Mine and the United States Geological Survey (site No. 76: Open File Report 81-539) has been incorporated in PacifiCorp's hydrologic database. Operational water quality monitoring was conducted during 1997 and 1998 (refer to the Quarterly Hydrologic submittals). Baseline quality analysis was initiated in November 1998. In accordance with the Hydrologic Monitoring Plan, baseline quality analysis will be conducted for a two-year period, forth quarter 1998 - fourth quarter 2000 (refer to the respective Annual Hydrologic reports). Due to the usual dry conditions, baseline water sample collection will be extended through the year 2002. Thereafter, baseline analysis will be repeated once every five (5) years.

Results of the samples collected in 2001 are presented in Tables 17, and 18. It is apparent from the data that the quality of the water degrades slightly from the upper reaches of Mill Fork, i.e., MFA1 to the mouth of the canyon, i.e., MFB2. Water quality has remained relatively consistent from year to year. (See Tables 17, and 18). Raw data is on file at the Energy West Main Office.

## 5. Rilda Canyon Creek

Rilda Canyon Creek is a tributary of Huntington Creek and is monitored according to the following schedule (see Appendix N). Rilda Canyon Creek is ephemeral from its headwaters to the western border of Section 28, Township 16 South, Range 7 East, and perennial from that point to the confluence of Huntington Creek.

- a. Flow and Sampling Schedule
  - (1) Locations:
    - (a) Right Fork of Rilda RCF1\*
    - (b) Left Fork of Rilda RCLF1\*\*
    - (c) Left Fork of Rilda RCLF2\*\*
    - (d) Rilda Canyon RCF2\*
    - (e) Rilda Canyon RCF3
    - (f) Rilda Canyon RCW4 (See Map HM-1.)
    - \* During mining of the North Rilda leases, an additional site was added in 1999 upstream of RCF1 (adjacent to EM-163) to monitor

- surface/groundwater relationships. Flow will be measured yearly during base flow conditions.
- \*\* Flow and field parameters only.
- (2) Flow: Information is collected during the first or second week of each month.
- Water Quality Sampling:
  Water samples will be collected and analyzed quarterly (one sample at low flow and high flow) during the first or second week of the quarter. Parameters analyzed are those listed in the DOGM Guidelines for Surface Water Operational Quality. (See Appendix N.) The program was initiated in June 1989 except for RCLF1 and RCLF2, which were initiated in 1990 and 1995, respectively, and will continue through 2002 on a quarterly basis, i.e., March, June, September, December. Field measurements, including pH, specific conductivity, temperature, and dissolved oxygen, will be performed at the perennial stream locations, i.e., RCF3 and RCW4, monthly in conjunction with quality measurements. Quantity will be monitored monthly.

Flow information is collected monthly throughout the year with the use of three Parshall flumes and one V-notch weir. (See Map HM-1 for locations.) A hydrograph has been generated for each flume-weir location. (See Appendix E.) Springs utilized by North Emery Water Users Association (NEWUA) for culinary purposes are situated between monitoring locations RCF2 and RCF3. Flow above the spring area is ephemeral and below the stream is perennial. For location RCF1 flow occurred from May through October with a peak flow estimated at 2,842 gpm in May. Location RCF1 was inaccessible from January through April and November through December. Flow at locations RCLF1 and RCLF2 occurred during the months May through July with a peak flow measured at 100 GPM. For location RCF2 flow occurred during the months of May through August, with peak flow estimated at 2,529 GPM in May and a base flow of 0.0 GPM during the months of January through April and September through December. Below the spring area the stream is perennial and increases in flow from RCF3 to RCW4. During 2001 the peak flow for RCF3 was estimated at 3,118 GPM (May); for RCW4, 3,117 GPM (May). Baseline flow for 2001 at RCF3 and RCW4 was approximately 75 and 125 GPM, respectively. Data suggest that above the NEWUA springs the stream loses water to the alluvium and below the spring area the alluvium recharges the stream causing the flow to increase.

#### c. Quality Information

In accordance with the Hydrologic Monitoring Plan baseline quality analysis was performed in 2001. Thereafter, baseline analysis will be repeated once every five (5) years. Quality sampling was initiated in 1989; results of the samples collected are presented in Tables 19, 20, and 21. It is apparent from the data that the quality of the water degrades from the upper reaches of Rilda Canyon, i.e., RCF1, to the NEWUA spring area, and from that point to the mouth of the canyon, i.e., RCW4. Water quality has remained relatively consistent from year to year. (See Tables 19, 20, and 21.) Raw data is on file at the Energy West Main Office.

# B. <u>Cottonwood Creek Drainage System</u>

The southern portion of East Mountain and the entire Trail Mountain is intersected by Cottonwood Creek and its associated tributaries, including Cottonwood Canyon Creek and Grimes Wash. The Cottonwood Creek drainage is about equal in size to the Huntington drainage, with total discharge from each drainage about 70,000 acre feet per year. The major cultural feature on Cottonwood Creek is Joe's Valley Reservoir, located about twelve miles west of the town of Orangeville. The 63,000 acre foot reservoir was constructed by the U. S. Bureau of Reclamation and provides storage water for irrigation, industrial, and municipal needs in the Emery County area.

PacifiCorp monitors two of the tributaries of the Cottonwood Creek drainage system, Cottonwood Canyon Creek and Grimes Wash. (See Map HM-1 in pocket.)

## 1. <u>Cottonwood Canyon Creek</u>

Based on data collected by PacifiCorp, Cottonwood Canyon Creek is an ephemeral stream from its headwaters to Section 24, Township 17 South, Range 6 East and intermittent from that point to its confluence with Cottonwood Creek. The majority of water moving through Cottonwood Canyon Creek appears to be through the colluvial valley deposits. An extensive hydrogeologic investigation was conducted in Cottonwood Canyon Creek during 1992. Results can be found in Appendix C of the PAP. Four (4) permanent runoff sampling sites have been established along Cottonwood Canyon Creek and sampled as listed below. (See Hydrologic Monitoring Plan in Appendix N).

- a. Flow and Sampling Schedule
  - (1) Locations: (See Map HM-1 in pocket.)
    - (a) Above Mine SW-1
    - (b) Below Mine SW-2
    - (c) @ USGS Flume CCC01\*
    - (d) Above Straight Canyon SW-3
  - (2) Flow: Information is collected during the first or second week of each month.

## (3) Water Quality Sampling:

Water samples will be collected and analyzed quarterly (one sample at low flow and high flow) during the first or second week of the quarter. Parameters analyzed will be those stated in the DOGM Guidelines for Surface Water Operational Quality. (See Appendix N.) The program was initiated in December 1992 and will continue through 2002, i.e., June, September, and December. Field measurements including pH, specific conductivity, and temperature will be performed monthly in conjunction with quality measurements. Quantity will be monitored monthly.

\* Flow and field parameters only.

#### b. Flow Information

As stated above, flow information is collected monthly throughout the year. (See Map HM-1 for flume locations.) A hydrograph for 2001 has been generated for each sampling location. (See Appendix F.) The hydrographs show the intermittent nature of Cottonwood Canyon Creek. Flow at SW-1, occurred from February through November (frozen in December) with a peak and base flow estimated at 175 (June) and <5 GPM, respectively. Flow at SW-2 occurred from January through December with a peak and average base flow estimated at 185 (April) and 40 GPM, respectively. Flow at SW-3 occurred throughout the year with a peak and average base flow estimated at 197 (June) and 40 GPM, respectively. Flows recorded at SW-2 and SW-3 were influenced by discharge from the Cottonwood Mine.

## c. Quality Information

In accordance with the Hydrologic Monitoring Plan, baseline quality analysis was performed in 2001. Thereafter, baseline analysis will be repeated once every five (5) years. The results of the historical operational quality analysis are listed in Tables 22, 23, and 24. The minimum, maximum, and mean values are given for a five-year period along with the historical results. Values are in milligrams per liter unless otherwise noted. Raw data is on file at the Energy West Main Office.

The Cottonwood Canyon Creek drainage quality is influenced by the following factors: 1) A relatively high amount of suspended solids during spring runoff from Indian, Roans, Mill, and Marines canyons; 2) Alluvial/colluvial deposit recharge and discharge areas.

#### 2. Grimes Wash

Grimes is an ephemeral tributary of Cottonwood Creek and flows in the same canyon in which the Wilberg/Cottonwood Mine is located. Three permanent runoff sampling sites were established in 1980 and are sampled as listed below (see Hydrologic Monitoring Plan in Appendix N).

- a. Flow and Sampling Schedule
  - (1) Locations: (See Map HM-1 in pocket.)
    - (a) Right Fork GWR01
    - (b) Left Fork GWR02
    - (c) Below the Mine GWR03
  - (2) Flow: Information is collected during the first or second week of each month.
  - (3) Water Quality Sampling:

Water samples will be collected and analyzed quarterly (one sample at low flow and high flow) during the first or second week of the quarter. Parameters analyzed will be those stated in the DOGM Guidelines for Surface Water Operational Quality. (See Appendix N.) The program was initiated in March 1988 and will continue through 2002 i.e., June, September, and December. Field measurements including pH, specific conductivity, and temperature will be performed in conjunction with quality measurements. Quantity will be monitored monthly.

#### b. Flow Information

As stated above, flow information is collected monthly throughout the year with the use of two Parshall flumes. (See Map HM-1 for flume locations.) A hydrograph comparing 2001 to the data collected from 1984 through 2000 has been generated for each flume location. (See Appendix G.) The hydrographs show that the Right Fork remained dry throughout the year and flow occurred from April through November in the Left Fork with a peak flow of 192 GPM in June and base flow of <20 GPM. Flow at the Below the Mine location continued throughout the year due to the influence of the springs emanating from the Starpoint Sandstone/Mancos Shale formational contact and Wilberg/Cottonwood Mine discharge (mine discharge May 2001). Peak flow occurred during the month of May at 510 GPM, and baseline flow averaged approximately 10 GPM.

## c. Quality Information

In accordance with the Hydrologic Monitoring Plan baseline quality analysis was performed in 2001. Baseline analysis will be repeated once every five (5) years. The results of the 2000 operational quality analysis are listed in Tables 25, 26, and 27. The minimum, maximum, and mean

values are given for a five-year period along with the historical results. Values are in milligrams per liter unless otherwise noted. Raw data is on file at the Energy West Main Office.

The Grimes Wash drainage quality is influenced by two factors: 1) Under normal conditions the Right Fork contributes a relatively high amount of suspended solids during spring runoff due to the fact that it is a south facing canyon dominated by argillaceous sediments; 2) Mancos Shale/Starpoint Sandstone interface seeps and springs elevate the TDS at the Below the Mine location.

#### IV. SPRINGS

#### A. East Mountain

Between the time PacifiCorp began monitoring springs on East Mountain and 1986 the number of springs measured increased from less than fifty (50) to nearly eighty (80). PacifiCorp believed that more benefit could be realized by concentrating its monitoring to selective springs in the areas that will be undermined within the next five years. (See Map HM-5 in pocket.) A meeting was held on March 25, 1987 with the U. S. Forest Service and the Utah State Division of Oil, Gas and Mining to determine the most effective plan for PacifiCorp's monitoring. A subsequent meeting was held on April 15, 1987 with the State Division of Oil, Gas and Mining to finalize the monitoring plan revisions. In addition to major revisions made in 1987, each year a meeting is held with State and Federal agencies to adjust the monitoring schedule based on field investigations.

During the meetings it was resolved that the following springs will be monitored. Eight additional springs (denoted with a plus [+] symbol below) were added in 1989 after the annual field verification process jointly conducted by DOGM and PacifiCorp.

* Burnt Tree Springs	79-40
* Elk Spring	80-41
* Sheba Springs	80-43
Ted's Tub	* 80-44
79-2	* 80-46
* 79-10	80-47
79-15	+ 80-48
* 79-23	80-50
<b>79-</b> 24	82-51
* 79-26	* 82-52
+ 79-28	* 84-56
* 79-29	+ 89-60 (Alpine Spring)
79-32	+ 89-61
79-34	+ 89-65
* 79-35	+ 89-66
79-38	+ 89-67
	+ 89-68

Of these springs, twelve will be monitored on a monthly basis, weather permitting, and have been denoted on the above list with asterisks (\*).

# 1. Flow and Sampling Schedule

#### a. Flow

All springs on the preceding list are measured during the months of July and October. In addition, a minimum of twelve springs are monitored to establish a discharge recession curve. Generally, measurements are made on a monthly basis during the months of July through October if weather and reasonable access permit; but when historical data indicate that a spring is short-lived, all efforts are made to measure discharge from that spring at least three times, equally spaced, within its flow period.

## b. Quality Samples

All springs listed above are sampled for water quality characteristics during the months of July and October. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Operational Quality. (See Appendix N.)

## 2. Spring Flow

Precipitation increased from 2000 to 2001 and spring discharge rates increased from 2000 to 2001, whereas temperature, a critical factor on spring discharge rates, was -0.1 degrees lower in 2001 than the historical average. Precipitation received at East Mountain weather station set a all time low for the 2000 water year. Precipitation rebounded in 2001 but was still slightly below average. East Mountain received substantial precipitation during October, which contributes to the yearly but not to the snowpack, the critical factor in spring outflow. Table 28, is a tabulation of the flow data collected during the 2001 monitoring season. To record the season variation, all springs measured in July are measured again in October. The seasonal variation is represented in Table 28, under the column heading "Seasonal Net Change." The percentage figures represent the amount of change, either positive or negative. The average change reveals a fifty-two percent (52%) [fifty-five percent (55%) by volume] decrease from the July to the October measurements.

An nineteen-year comparison of spring discharge is shown in Table 29. The table includes a year by year comparison of springs identified from each mode of occurrence (Table 30). The springs utilized in the comparison are underlined in Table 30. The flow values for the individual springs represent the July measurements. October measurements were not utilized because winter weather conditions caused some springs to become inaccessible.

Table 29 has been compared to East Mountain climatology to see how closely spring discharge rates follow local annual precipitation. Figure 3 reveals good correlation between spring discharge and precipitation. Along with precipitation, temperature plays a critical role in yearly discharge variations, especially during the early stages of the runoff period. Listed in Table 31 is a comparison of January through June temperature data from surrounding weather stations for the period 1982-2001 versus

departure from normal. The comparison is vital in determining mining effects on spring discharge versus general changes in annual precipitation.

Table 31 clearly demonstrates near average temperatures between 1982 and 1984, but starting in 1985 and continuing through 2000 (except for 1991) positive departure from normal has been significant. In 2001 the temperatures were -0.1 degrees below average. Comparison between spring discharge rate and general changes in annual precipitation patterns correlated well in the past due to relatively normal temperatures experienced during the early runoff period (January through June). Figure 3 not only includes a comparison of spring discharge rate and precipitation as in the past but also temperature departure due to critical influence temperature has on peak discharge occurrence.

An additional flow information study was initiated during the summer of 1985. The purpose of the program is to establish flow recession curves for the following springs: (1) Burnt Tree, (2) Elk Springs, (3) Sheba, (4) 79-10, (5) 79-23, (6) 79-26, (7) 79-29, (8) 79-35, (9) 80-44, (10) 80-46, (11) 82-52, (12) 84-56. The flow information collected during 2000 is shown in Table 32; corresponding spring recession curves comparing 2001 to 1984-2000 are located in Appendix H.

## 3. Quality

To more closely identify springs which are related one with another, water samples were analyzed to determine the percentage of cations and anions in solution. The percentages have been graphically represented as cation-anion diagrams. (See Appendix H.) The purpose of the cation-anion diagrams is to identify groups of related springs by water chemistry. To better visualize the concept, the cation-anion diagrams are presented by the geologic formation in which the spring originates. A general pattern for the Flagstaff and Price River formations can be recognized for each year in which the cations/anions were analyzed. A consistent pattern for the North Horn is less obvious due to the complex geology of the formation itself. One aspect the cation-anion diagrams demonstrate is that, even though the quality varies slightly from individual sites as well as from different formations, seasonal variations do not exist.

The quality of the springs sampled in 2001 reveals an excellent correlation with historical averages. A summary of the water quality analysis for a representative group of East Mountain Springs is presented in Table 33. In the table, the mean values for 2001 are compared to the historical results for each respective spring. Raw data is on file at the Energy West Main Office.

# B. Rilda Canyon - North Emery Water Users Association (NEWUA)

Of concern to PacifiCorp Energy West is the proximity of proposed mining activities in Rilda Canyon to the Rilda Canyon Springs which currently serve as a culinary water source to the North Emery Water Users Association (NEWUA). The NEWUA spring system consists of a series of collection lines extending westward up Rilda Canyon and southward up a small side drainage (shown on Map HM-8 in Volume 9 of the PAP). The NEWUA spring system is metered at four locations. Meter 1 (Side Canyon Spring) is located at the downstream end of a collection line which enters Rilda Canyon from the South. Meter 2 (Side Canyon Spring plus South Spring) is located near the bottom of the main east-west trending collection line which lies to the south of Rilda Canyon Creek at a point just upstream (west) of the main spring collection box. Meter 2 records combined flows from both the

Side Canyon (Meter 1) as well as additional inflows known as South Spring which enter the system below Meter 1. Meter 3 (North Spring) records flows for the east-west central collection line which was constructed through the central portions of the valley near Rilda Canyon Creek. Meter 4 (North Spring) collects data from the north collection line located on the north side of Rilda Canyon Creek. During 1995 flow from the north collection line was combined with the central collection system. As a result Meter 4 was terminated.

## 1. Spring Flow

Through the cooperative efforts of PacifiCorp and NEWUA, flow meters were installed in September 1990 to isolate individual spring areas for quantity and quality (see Map HM-8 in Volume 9 of the PAP). Table 34 lists the individual flow rates for meters 2 and 3 (flow from Meter 1 is included in Meter 2).

The seasonal variation of the monthly average flow from NEWUA's Rilda Canyon Springs is shown in Figure 4. With the installation of flow meters, individual spring contribution to the total flow can be plotted over time.

#### 2. Quality

Baseline quality sampling of the individual springs was performed in 2001. The minimum, maximum, and mean results of the 2001 spring flow compared to historical quality analysis are listed in Table 35. Values are in milligrams per liter unless otherwise noted. Raw data is on file at the Energy West Main Office. As stated in Volume 9 of the PAP, differences in the groundwater quality data reflect differences in the groundwater source or the origin of groundwater for the various springs issuing within the Rilda Springs area. The higher sulfate and TDS concentrations from the Meter 2 samples are characteristic of waters associated with the Blackhawk Formation. Waters issuing from the North Spring collection system (Meters 3 and 4) area are of a better quality than waters from the Side Canyon and South Spring collection areas. Water issuing from the North Spring originates primarily from water moving within the alluvial valley sediments and fracture systems of the Starpoint Sandstone and is not derived from the Blackhawk Formation.

## C. <u>Trail Mountain</u>

PacifiCorp began monitoring springs on Trail Mountain in 1993. Monitoring prior to 1993 was completed by the previous lease holders. The nine (9) springs listed below are monitored.

T-6 (18-2-1)	T-14 (17-25-1)
T-8 (17-21-1)	T-14A (17-26-5)
T-9 (17-22-1)	T-15 (17-35-1)
T-10 (17-26-4)	T-16 (17-35-2)
TM-23 (17-14-4)	,

## 1. Flow and Sampling Schedule

#### a. Flow

All springs on the preceding list are measured during the months of July through October if weather and reasonable access permit.

## b. Quality Samples

All springs listed above are sampled for water quality characteristics during the months of July and October. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Operational Quality. (See Appendix N.)

#### 2. Spring Flow

As indicated earlier, precipitation increased and spring discharge rates decreased from 2000 to 2001 (the inverse relationship was due to decreased flow from the Cottonwood Canyon alluvial system). Table 36 is a tabulation of the flow data collected during the 2001 monitoring season. The seasonal variation is represented in Table 36 under the column heading "Seasonal Net Change %." The percentage figures represent the amount of change, either positive or negative. The average change reveals a sixty-two percent (62%) [seventy-six percent (76%) by volume] decrease from July to the October measurements.

A fourteen-year comparison of spring discharge is shown in Table 37. The flow values for the individual springs represent the July measurements. October measurements were not utilized because winter weather conditions caused some springs to become inaccessible.

## Cottonwood Spring (TM-23) Data:

On July 31, 1991 a citizen complaint claiming that the mining in the Deer Creek Mine dried up a spring known as Cottonwood Spring was filed by Jim Peacock. According to Mr. Peacock, Cottonwood Spring produced approximately one to three cubic feet/second and was the main source of flow for Cottonwood Canyon Creek (conversation during an on site visit with Utah State Division of Water Rights, Cottonwood Irrigation Company, United States Forest Service, Utah State Division of Oil, Gas & Mining [DOGM], and PacifiCorp held on August 1, 1991). Mr. Peacock indicated that production from the spring had been decreasing over the past several years and that he was unable to irrigate approximately twenty-two acres located on the north side of Highway 31 at the junction of Cottonwood Canyon Creek and Straight Canyon. Discussions during the on site visit centered around the location and extent of mining in the Deer Creek Mine, the drought which has had a major impact on the hydrologic resources of the area, and the hydrogeology of Cottonwood Spring.

As a result of the on site visit DOGM reviewed the available historical data on the flow and quality of Cottonwood Spring. In addition to historical review, DOGM requested that PacifiCorp update the Probable Hydrologic Consequences (PHC) in the Deer Creek Mine Permit Application Package (PAP). The Deer Creek PHC was updated and submitted on three separate occasions: December 19, 1991; March 23, 1992; and again on July 15, 1992. As part of the March 23, 1992 submittal PacifiCorp committed to drilling a series of wells and conducting a resistivity survey in Cottonwood Canyon Creek during the 1992 field season to determine the hydrologic significance of the alluvial deposits and the interrelationship of the surrounding strata. In addition to the work completed in 1992, PacifiCorp contracted Mayo & Associates during 1996 to complete a comprehensive hydrologic investigation of surface and groundwater systems in the East & Trail Mountain areas (refer to Appendix C in Volume 9 and Mayo & Associates Study in Volume 9: Hydrologic Support Information). During the investigation, Mayo & Associates analyzed 1) solute and isotopic compositions of surface waters and groundwaters, 2) surface water and groundwater discharge data, 3) piezometric data, and 4) geologic information. From the fall of 1998 through early 2001, Energy West Mining conducted gain/loss surveys of Cottonwood Canyon Creek to compare historical studies conducted by the USGS.

The United States Geological Survey (USGS) collected quality and quantity data at the Cottonwood Spring site from 1978 through 1982 (Open File Report 81-539 and 84-067). Monitoring of Cottonwood Spring was included in the Trail Mountain MRP in 1986 following a spring and seep survey conducted by JBR in 1985.

The following is a list of sources and the time frame in which data was collected:

USGS	1978-1982
JBR	1985
Trail Mountain Coal Co.	1986-1987
Mountain Coal Co.	1987-1992
Energy West Mining	1992-Present

As document in Volume 9, Cottonwood Canyon Creek is a major drainage system which borders the western limit of the East Mountain Permit area. Based on data collected by PacifiCorp, Cottonwood Canyon Creek is an ephemeral stream from its headwaters to Section 24, Township 17 South, Range 6 East and intermittent from that point to its confluence with Cottonwood Creek at Straight Canyon. During periods of drought flow in Cottonwood Canyon Creek is limited to flow emanating from the alluvial deposits at the intersection of Roans Canyon. From the intersection of Roans Canyon to Section 36 the stream loses water to the alluvial deposits. The drainage is dry from Section 36 to Section 6 except during spring runoff which occurs normally from late April through June or during precipitation events. Flow in the channel reemerges in Section 6 and continues to the confluence with Cottonwood Canyon at Straight Canyon.

It is evident in reviewing all of the data including; drilling results, resistivity surveys, well hydrographs and isotope information that the source of groundwater for Cottonwood Spring is the alluvial system of Cottonwood Canyon. Groundwater production from Cottonwood Spring area is function of precipitation and groundwater recharge. In reviewing the well hydrographs for wells CCCW1-3, groundwater levels in the alluvial wells have been increasing since mid 1995 in direct response to normal precipitation patterns (refer to Appendix F for hydrograph information). Groundwater trends in the Star Point Sandstone in wells CCCW-1 and CCCW-3 have been relatively constant or decreasing slightly. As stated previously, data collected during the development of the wells indicated that the alluvial system is not hydrologically connected to lower Blackhawk/Star Point formations. Monitoring data from the wells supports this conclusion.

Data collected during gain/loss surveys conducted from November 1998 through October 2000, compares directly to the measurements reported by the USGS in 1979 (Open File Report 81-539). Cottonwood Spring flow data reported by the USGS was not from a individual source, but was the difference in flow measurements above and below the spring area (refer to the 2000 Annual Hydrologic Report Appendix I for gain/loss survey results). Included in Appendix I is a hydrograph comparing the Palmer Drought Index (average of Regions 4 & 5) to Cottonwood Spring area flow. In reviewing the hydrograph, flow from the Cottonwood Spring area fluctuates in direct response to precipitation patterns and was not influence by mining in the Deer Creek Mine.

## 3. Quality

To more closely identify springs which are related one with another, water samples were analyzed to determine the percentage of cations and anions in solution. The percentages have been graphically represented as cation-anion diagrams. (See Appendix I.) The purpose of the cation-anion diagram is to identify groups of related springs by water chemistry. To better visualize the concept, the cation-anion diagrams are presented by the geologic formation in which the spring originates. A general pattern for the geologic formations can be recognized for each year in which the cations/anions were analyzed. A consistent pattern for the North Horn Formation is less obvious due to the complex geology of the formation itself. One aspect the cation-anion diagrams demonstrate, is that, even though the quality varies slightly from individual sites as well as from different formations, seasonal variations do not exist.

The quality of the springs sampled in 2001 reveals an excellent correlation with historical averages. A summary of the water quality analysis for springs monitored on Trail Mountain is presented in Table 38. In the table, the mean values for 2001 are compared to the historical results for each respective spring. Raw data is on file at the Energy West Main Office.

#### V. MINE HYDROLOGY

## A. Groundwater and Surface Water Sources in Relation to Mine Workings

The relationship of the Deer Creek, Cottonwood/Wilberg, and Trail Mountain mine workings with the overlying springs is shown in Map HM-5 (in pocket). Beginning in 1979 (Trail Mountain 1992), PacifiCorp has developed an ambitious spring monitoring program with emphasis to detect changes in the East and Trail Mountain hydrologic regime as a result of mining. The data collected to date reveal no indication of any mine-related effects on spring discharge or surface flow rates. As expected, there is a direct relationship between annual precipitation, temperature, and spring discharge rates as previously discussed in the SPRING SECTION and shown in Figure 3.

## B. <u>Groundwater Quality and Collection Procedures</u>

PacifiCorp began in-mine quality and quantity measurement in 1977 and has continued the measurement through 2001. With the collection of numerous samples throughout the extent of the mine workings, the quality has remained relatively constant. (Refer to Cation/Anion diagrams in Appendices J, K and L).

Collection procedures for groundwater quality consist of two grab samples collected and analyzed per quarter at each of the mines which produces measurable quantities of water. Sampling according to this established plan began in the first quarter of 1982. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Operational Quality except when new sites are established. In that case, baseline information will be collected for two (2) years. (See Appendix N.)

Long-term monitoring locations have been established at each of the mines which produces measurable quantities of water, i.e., Deer Creek, Cottonwood/Wilberg, and Trail Mountain mines. (See Maps HM-2, HM-3, and Plate 7-3 in pocket.) Four types of occurrences have been recognized to exist within the current mine workings. (Refer to Figure 5.)

- 1. Structural rolls with overlying fluvial channels,
- 2. Fault systems (Pleasant Valley and Roans Canyon),
- 3. Fractures and joints (lineaments),
- 4. Roof bolt and in-mine drill holes.

A collection device was installed at each long-term monitoring location. Flow and temperatures collected on a quarterly basis from the long-term sites in both mines were fairly consistent. (See appendices J, K, and L for the Deer Creek, Cottonwood/Wilberg, and Trail Mountain In-Mine hydrographs.)

## C. Mine Water

#### 1. <u>Deer Creek Mine</u>

#### a. In-Mine Water Production

The best estimate of in-mine water production was arrived at by combining the following values:

Deer Creek Discharge	844.5 Million Gallons
Estimated Evaporation*	18.9 Million Gallons
Domestic Usage	6.4 Million Gallons
Total Discharge	869.8 Million Gallons

<sup>\*</sup>See 1981 Hydrologic Monitoring Report

## b. In-Mine Quality

Six samples were collected in the Deer Creek Mine in 2001. (See Map HM-2 in pocket for locations.) Parameters analyzed in 2001 are those listed in the DOGM Guidelines for Groundwater Baseline or Operational Quality. (See Appendix N.)

Table 39 lists the characteristics of the samples collected and compares the mean, minimum, and maximum results of 2001 to the historical values for each location. It is apparent from Table 39 that the average quality of the in-mine water has remained relatively constant. (Refer to Cation/Anion diagrams in Appendix J.) Raw data is on file at the Energy West Main Office.

#### c. Discharge Quantity

Excess water not utilized in the mining operation or for domestic use was either pumped to storage areas or discharged from the mine. The locations of the main sump areas within the mine are shown in Figure 6. The largest volume of water is stored in the western part of Main West, which has not been actively mined for several years.

In-line flow meters are utilized to record the amount of water discharged from the mine, after which it passes through underground sedimentation sumps. Discharge from Deer Creek is either shipped directly to Huntington Power Plant or to the Deer Creek drainage in accordance with stipulations of the Deer Creek UPDES Discharge Permit UT-0023604-002.

The total water discharged from the Deer Creek Mine during 2001 was estimated at 2,585 acre feet, or 844.5 million gallons. The recorded flow of 2,585 acre feet during 2001 is a fourteen

percent (14%) increase from the 2001 discharge of 2,272 acre feet. The average monthly discharges are shown in Figure 7.

A graph displaying the historical discharge rates is included as Figure 8. The volume of water discharged from the mine has increased at a significant rate from 1988 through 1991 due to at least five factors. First, in previous years water discharged was measured with a Stevens Recorder installed in a Parshall flume. It was difficult to maintain calibration of the recorder and, in 1985, in-line flow meters (totalizer and instantaneous flow) were installed, allowing for a more accurate measurement of discharge. Second, mining has progressed into areas largely dominated by sandstone roof. The inflow from those areas is greater per acre of exposed area than areas of mudstone top. Third, mining has progressed into the bottom of the Straight Canyon Syncline, the lowest part of the mine, where a significant amount of water has been intersected. Fourth, mining has intersected the Roans Canyon Fault Graben which has released additional water into the mine workings. Last, prior to 1985, water used in mining was pumped directly from the in-mine sumps. Since that time, all water has been pumped from the mine through the metering system. Mining water is then pumped back into the mine through a high-pressure steel line to the mining faces where it is utilized. Water production decreased significantly in 1992 with the sealing of the 4th South area.

## d. Discharge Quality

Monthly water quality samples were collected for 2001. Table 40 compares the minimum, maximum, and mean values from an historical standpoint to 2001. An examination of Table 40 reveals excellent correlation with historical results. Raw data is on file at the Energy West Main Office.

#### 2. Des-Bee-Dove Mine

Production at the Des-Bee-Dove Mine was terminated indefinitely as of February 14, 1987. The portals were sealed and underground hydrologic monitoring was discontinued.

# 3. Wilberg/Cottonwood Mine

The mine fire which occurred in late 1984 altered normal hydrologic monitoring at the Wilberg Mine. Normal hydrologic monitoring was reinstated in late 1985 and continued through May 2001. Energy West Mining Company notified the Division of temporary cessation of coal mining operations at the Cottonwood/Wilberg Mine effective May 29, 2001. Coal mining at the Trail Mountain Mine/coal transfer to Cottonwood Tipple ceased as of March 15, 2001. In preparation of temporary cessation, all associated mining equipment including; belt haulage (drives and headrollers), dewatering (pumps and control boxes) and electrical (transformers/rectifiers) were removed from the mine. Verification of equipment removal was conducted on May 4, 2001 Division of Oil, Gas and Mining (Pete Hess) participating in the review. Bureau of Land Management was notified but was unable to

attend. A plan to construct permanent seals was submitted to and approved by Mine Safety Health Administration. Sealing of the mine portals was completed on May 28, 2001.

#### a. In-Mine Water Production

In previous reports, the in-mine water production was arrived at by combining mine discharge, domestic use, and evaporation. Due to the fire, normal coal production and usage were not experienced. Pre-fire coal production resumed during late 1985. A large part of the mine workings have been sealed since the fire. The locations of the sealed areas and sumps are shown on Figure 9. As reported in the 1984 Annual Report, water discharged from the Wilberg Mine complex includes the area designated as the Cottonwood Mine. (See Figure 10.) Consistent with previous years, the following table lists the factors involved in estimating in-mine water production.

## Wilberg/Cottonwood Discharge

15.2 Million Gallons
0.0 Million Gallons
7.9 Million Gallons
1.9 Million Gallons

Total Discharge 25.0 Million Gallons

# b. In-Mine Quality

Two samples were collected in the Wilberg/Cottonwood Mine in 2001 prior to temporary cessation. (See Map HM-3 in pocket for locations.) Parameters analyzed in 2001 are those listed in the DOGM Guidelines for Groundwater Baseline or Operational Quality. (See Appendix N.) Table 41 lists the characteristics of the samples collected and compares the mean, minimum, and maximum results of 2001 to the historical values. The average quality by location has remained relatively constant for each individual location. (Refer to Cation/Anion diagrams in Appendix K.) Raw data is on file at the Energy West Main Office.

## c. Discharge Quantity

Prior to temporary cessation, water produced in the Wilberg Mine gravity flows to the northern area of 1st North. At that point it can either be pumped by a vertical turbine located in the Deer Creek

<sup>\*</sup> Discharge Outfall 001 re-located from Grimes Wash to Cottonwood Canyon Creek TMA Portal - July 2001

<sup>\*\*</sup> Sealed ventilation breakout which intermittently discharges.

<sup>\*\*\*</sup> See 1981 Hydrologic Monitoring Report.

Mine which picks up the water and pumps it back to the south and down to the Wilberg Mine main sump or pumped directly to the main sump utilizing submersible pumps. Water produced in the Cottonwood Mine (2nd North area) is transferred to the Wilberg Mine sump. The sump, which functioned as a settling basin, effectively removes settleable solids from the water. A portion of the water was redistributed to various areas of the mine to be utilized in the mining operations. A total of 8.9 million gallons was discharged to Grimes Wash during 2001. A total of 6.3 million gallons was discharged to Cottonwood Canyon Creek (TMA portal) during 2001. No discharge occurred in 2001 at the Miller Canyon breakouts, which were developed for ventilation purposes but sealed in 1987. (See Figure 11.) The portal breakouts at Miller Canyon were reclaimed in 1999. Minor seeps occur through a french drain system installed at each portal, but groundwater production is insufficient for measurement. Discharge from Cottonwood Mine is monitored in accordance with stipulations of the Wilberg Mine Discharge UPDES Permit UT-0022896.

#### d. Discharge Quality

Samples are collected each month from Grimes Wash and Miller Canyon breakouts whenever discharge occurs. Monthly samples were collected from either the Grimes Wash or TMA locations during 2001, except from May through July when no discharge occurred. Table 42 compares the minimum, maximum, and mean values from 2001 to the historical values.

#### 4. Trail Mountain Mine

Energy West Mining Company notified the Division of temporary cessation of coal mining operations at the Trail Mountain Mine effective May 4, 2001. Coal mining at the Trail Mountain Mine ceased as of March 15, 2001. In preparation of temporary cessation, all mining equipment including; production (longwall and continuous miner), belt haulage and electrical were removed from the mine. Verification of equipment removal was conducted on April 6, 2001 with Bureau of Land Management (Steve Falk) and Division of Oil, Gas and Mining (Pete Hess) participating in the review. A plan to construct permanent seals was submitted to and approved by Mine Safety Health Administration. Sealing of the mine portals was completed on May 2, 2001.

#### In-Mine Water Production a.

The best estimate of in-mine water production was arrived at by combining the following values:

Trail Mountain Discharge

14.4 Million Gallons

Estimated Evaporation\*

6.3 Million Gallons

Domestic Usage

1.1 Million Gallons

Total Discharge

21.8 Million Gallons

<sup>\*</sup> See 1981 Hydrologic Monitoring Report

## b. In-Mine Quality

One sample was collected in the Trail Mountain Mine in 2001 prior to temporary cessation. (See Plate 7-3 for locations.) Site UG-2 was terminated in 1995 due to insufficient flow. Parameters analyzed in 2001 are those listed in the DOGM Guidelines for Groundwater Baseline or Operational Quality. (See Appendix N.) Table 43 lists the characteristics of the samples collected and compares the mean, minimum, and maximum results of 2001 to the historical values for each location. It is apparent from Table 43 that the average quality of the in-mine water has remained relatively constant. (Refer to Cation/Anion diagrams in Appendix L.)

## c. Discharge Quantity

Prior to cessation, water produced in the Trail Mountain Mine either is pumped or gravity flows to a sump located in 4th Left, 5th Left, and 3rd South. (See Figure 12.) A portion of the water is redistributed to various areas of the mine to be utilized in the mining operations. Excess water not used in the mining operations is stored in sealed areas of the mine or discharged to Cottonwood Canyon Creek. A total of 14.4 million gallons was discharged to Cottonwood Canyon Creek during 2001. (See Figure 13.) Discharge from Trail Mountain is monitored in accordance with stipulations of the Trail Mountain Mine UPDES Discharge Permit UTG040003-002.

## d. Discharge Quality

Monthly water quality samples were collected from January through April 2001. Discharge from the Trail Mountain Mine was initiated in June of 1997. Table 44 compares the minimum, maximum, and mean values from an historical standpoint to 2001. Raw data is on file at the Energy West Main Office.

#### VI. PIEZOMETRIC GRADIENT INFORMATION

#### A. Surface

## 1. <u>Cottonwood Canyon Creek</u>

Eight (8) wells located along the extent of Cottonwood Canyon Creek are monitored monthly. The following table lists the zone isolated with each well.

Well I.D.	Monitoring Zone
CCCW-1A	Alluvial Deposits
CCCW-1S	Starpoint Sandstone
CCCW-2A	Alluvial Deposits
CCCW-3A	Alluvial Deposits
CCCW-3S U	Blackhawk - Fluvial Sandstone
CCCW-3S L	Starpoint Sandstone
EM-31	Lower Blackhawk/Starpoint Sandstone
TM-1B	Starpoint Sandstone
TM-3	Starpoint Sandstone (Straight Canyon)

## 2. Rilda Canyon

Six (6) wells located in Rilda Canyon are monitored monthly when accessible. The following table lists the zone isolated with each well.

Well I.D.	Monitoring Zone
P-1	Alluvial Deposits
P-4	Alluvial Deposits
P-5	Alluvial Deposits
P-6	Alluvial Deposits
P-7	Alluvial Deposits
EM-47	Lower Blackhawk/Starpoint Sandstone

Information collected during 2001 correlated well with historical information. As a result of mining in the western portion of the Trail Mountain Mine Well TM-3 in Straight Canyon decreased in level due to depressurization of the Star Point sandstone. Hydrographs for the individual wells can be found in Appendix E - Rilda Canyon, Appendix F - Cottonwood Canyon.

## B. <u>In-Mine</u>

## 1. <u>Deer Creek</u>

Four (4) long-term monitoring wells were completed during 1989. (See Map HM-2 for well locations.) Due to changes in the mine layout only one well remained active during 2001. Water levels remained constant during 2001. (See Appendix J.)

## 2. <u>Cottonwood Mine</u>

During 1989 four holes were drilled in the Cottonwood Mine. Monitoring of the long-term wells, WCP 1-3, was discontinued in 1992 due to the sealing of the 3rd South area.

## VII. WASTE ROCK WELLS

## A. <u>Deer Creek Mine - Waste Rock Storage Facility</u>

The Deer Creek Waste Rock Storage Facility is located on the northeast side of State Highway 31 approximately six (6) miles west of Huntington, Utah.

The geology of the Deer Creek Waste Rock Storage Facility is fairly simple and straightforward. The site is located on the southern flanks of Gentry Mountain in the area just south of Wild Horse Ridge. Rocks exposed in the area are marine-derived mudstones in the lower portion of the Masuk member of the Mancos Shale. The Masuk Shale on the bench which adjoins the proposed site on the east and west is covered by a five- to twenty-foot thick layer of terrace gravel of Quaternary age. North-south trending normal faults have disrupted the strata in the region; however, no faults are known to exist within the area of the Deer Creek Waste Rock Storage Facility.

The test wells completed prior to construction identified the existence of a limited quantity of groundwater locally in the Masuk Shale. The water is most likely flowing along fractures in the strata. The rate of water migration has been shown to be extremely slow (<100 feet per year); therefore, the operations to be conducted at the waste rock site should not impact the hydrology of the area. The weathered Masuk Shale present on and near the ground surface will act as an effective barrier to prevent the surface waters from migrating to depths and intersecting groundwater.

The groundwater present in the terrace gravels should not be impacted by the waste rock site because it is located at a higher elevation than the proposed site.

In order to identify the groundwater quality characteristics of the waste rock storage facility one of the test wells completed prior to the construction of the site was developed into a long-term water monitoring well. (See Map HM-1 for location.)

Four samples were collected in 2001. The analysis, along with water depth, is listed in Table 45. Values are in milligrams per liter unless otherwise noted. Raw data is on file at the Energy West Main Office. It is a well known fact that the Mancos Shale typically contains large quantities of soluble minerals such as gypsum; therefore, any water passing through it will be naturally high in dissolved solids. Samples at the waste rock well verify this condition.

## B. <u>Cottonwood/Wilberg Mines - Waste Rock Storage Facility</u>

The Cottonwood/Wilberg Waste Rock Storage Facility is located on the west side of the Wilberg Mine road approximately 1.5 miles south of the Wilberg Mine.

The geology of the proposed waste rock site is fairly simple and straightforward. The site is located on the southern flank of East Mountain to the south of Newberry Canyon. Rocks exposed in the area are marine-derived mudstones in the lower portion of the Masuk member of the Mancos Shale. The Masuk Shale on the bench which adjoins the proposed site on the north and east is covered by a five- to twenty-foot thick layer of terrace gravel of Quaternary age. North-south trending normal faults have disrupted the strata in the region; however, no faults are known to exist within the area of the waste rock site.

In order to identify the groundwater quality characteristics of the waste rock storage facility one of the test wells completed prior to the construction of the site was developed into a long-term water monitoring well. (See Map HM-1 for location.)

Four samples were collected in 2001. The analysis, along with water depth, is listed in Table 45. Values are in milligrams per liter unless otherwise noted. Raw data is on file at the Energy West Main Office. It is a well known fact that the Mancos Shale typically contains large quantities of soluble minerals such as gypsum; therefore, any water passing through it will be naturally high in dissolved solids. Samples at the waste rock well verify this condition.

## VIII. EFFECTS OF MINING AND SUBSIDENCE ON HYDROLOGY

Since the development of the PacifiCorp mining complex on East and Trail mountains, coal has been extracted causing the partial collapse of the immediate overburden strata and, ultimately, surface subsidence. This occurs in areas of retreat mining in room and pillar sections and in areas of longwall mining. All areas with potential for subsidence are monitored annually. (See annual Subsidence Monitoring reports.)

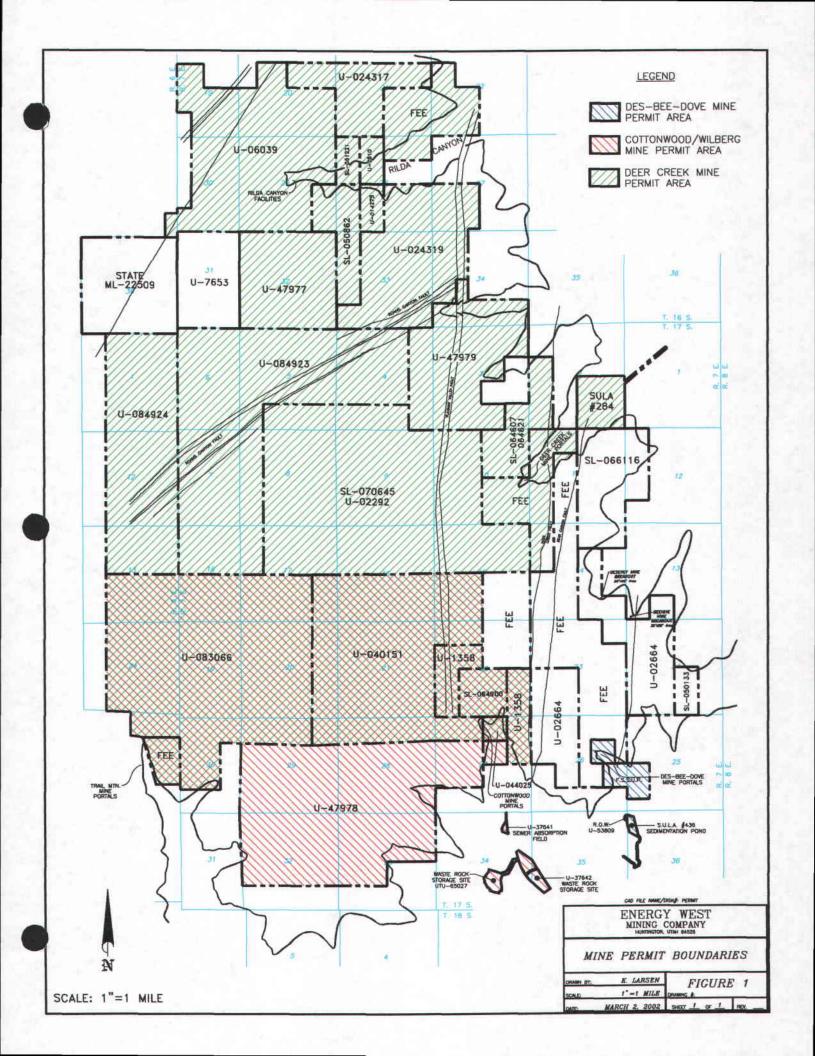
The springs and surface waters above all areas of mine workings are being monitored closely to measure the effects of mining. No mining-related changes to the springs or surface waters have been identified in the data collected. The water flowing into the mine workings, although temporarily diverted or detained, has not had an impact on the surface waters of East and Trail mountains or the surrounding area.

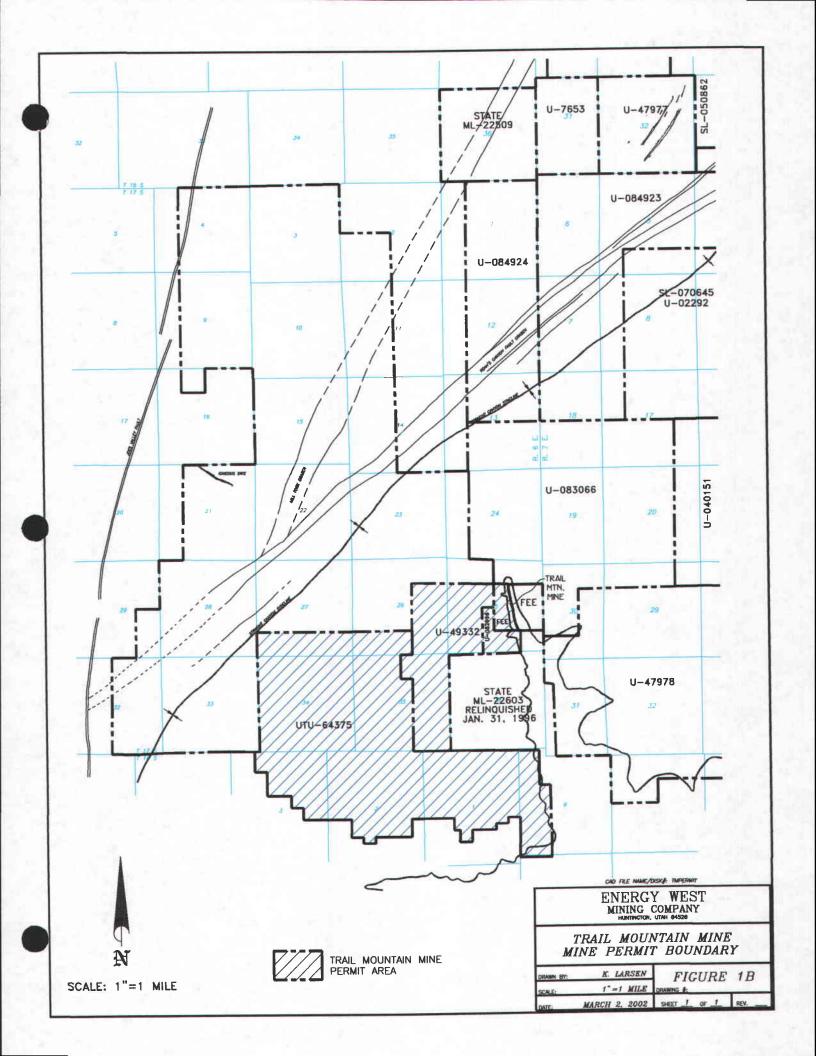
## IX. SUMMARY

PacifiCorp has been conducting a water monitoring program in the area of its underground coal mines in Emery County, Utah in accordance with federal and state regulations. The program has been in existence since 1977, and this is the twenty-fourth annual report submitted concerning the hydrology.

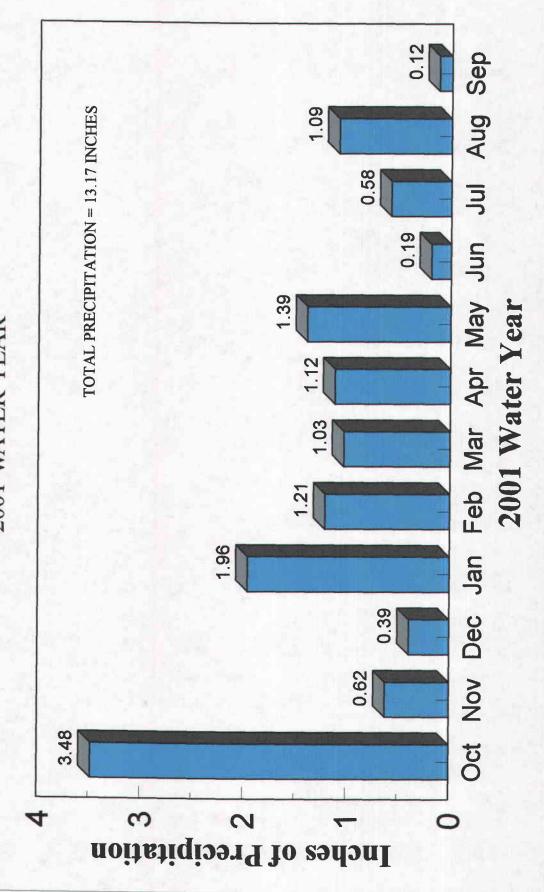
From 1982 to 1984 the Western United States, especially Utah, experienced an unprecedented wet cycle of precipitation. The pattern changed in 1985 with conditions returning to slightly above normal. During the 1986 water year the extremely wet trend returned, and the upper Colorado River Basin experienced above average precipitation. The 1987 weather pattern changed dramatically with near normal valley precipitation and mountain snowfall much below normal. The resulting 1987 runoff was substantially below normal. The drought continued from 1988 through 1992 and returned in 1994. Runoff improved substantially in 1993 and 1995 through 1998 with above average flow conditions occurring in most drainages. In 1999 runoff was higher than normal although not as high as 1998. In 2000, weather conditions changed dramatically and the resulting runoff and groundwater production was much lower than normal. Precipitation was higher in 2001 but the runoff values remained much below normal.

The data collected in 2001 continued to show the relationship between the variation in surface water quantity and precipitation, but the hydrologic monitoring completed on East and Trail mountains to date has failed to identify any change in the quantity or quality of ground or surface water which can be attributed to mining on the East and Trail Mountain properties.





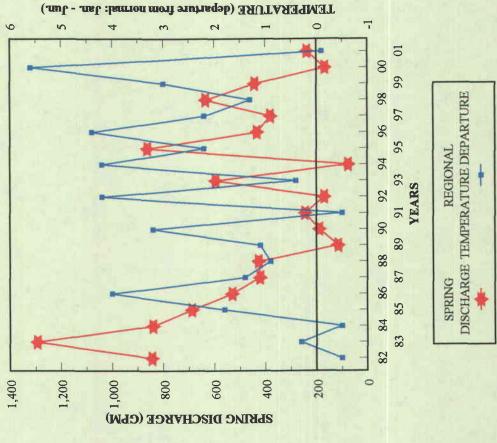
## FIGURE 2 EAST MOUNTAIN PRECIPITATION 2001 WATER YEAR



SPRING DISCHARGE vs. PRECIPITATION & TEMPERATURE **EAST MOUNTAIN** SPRING DISCHARGE (GPM) 1,400 1,200 FIGURE 3a EAST MOUNTAIN PRECIPITATION (inches) 

1,400

1,200



SPRING DISCHARGE (see Table 29)

YEARS

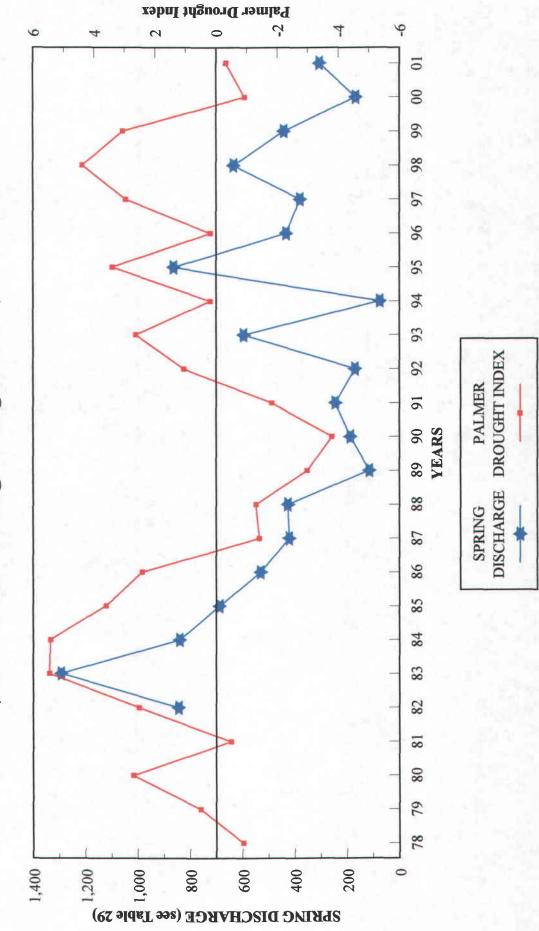
DISCHARGE PRECIPITATION

EAST MIN

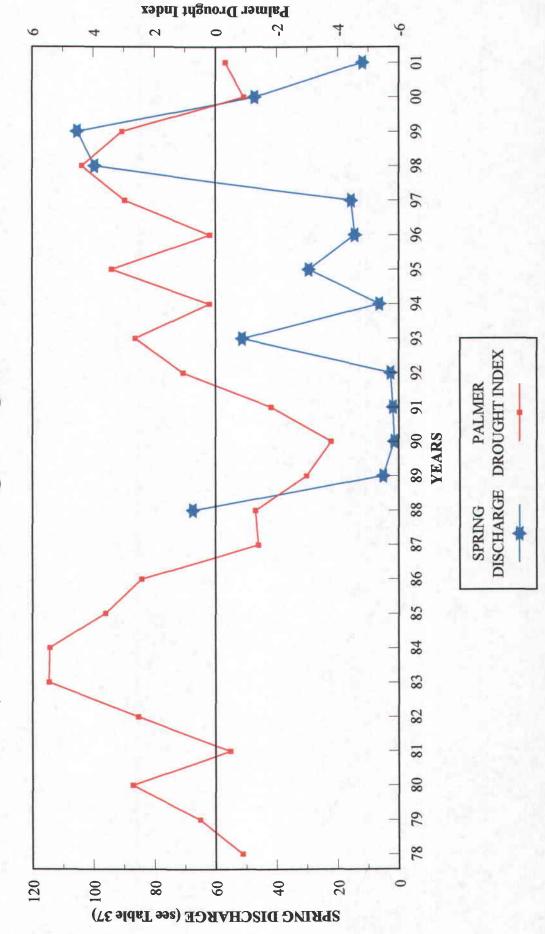
SPRING

SPRING DISCHARGE vs. PALMER DROUGHT INDEX (Palmer Data - Average of Region 4 & 5) **EAST MOUNTAIN** 

FIGURE 3b

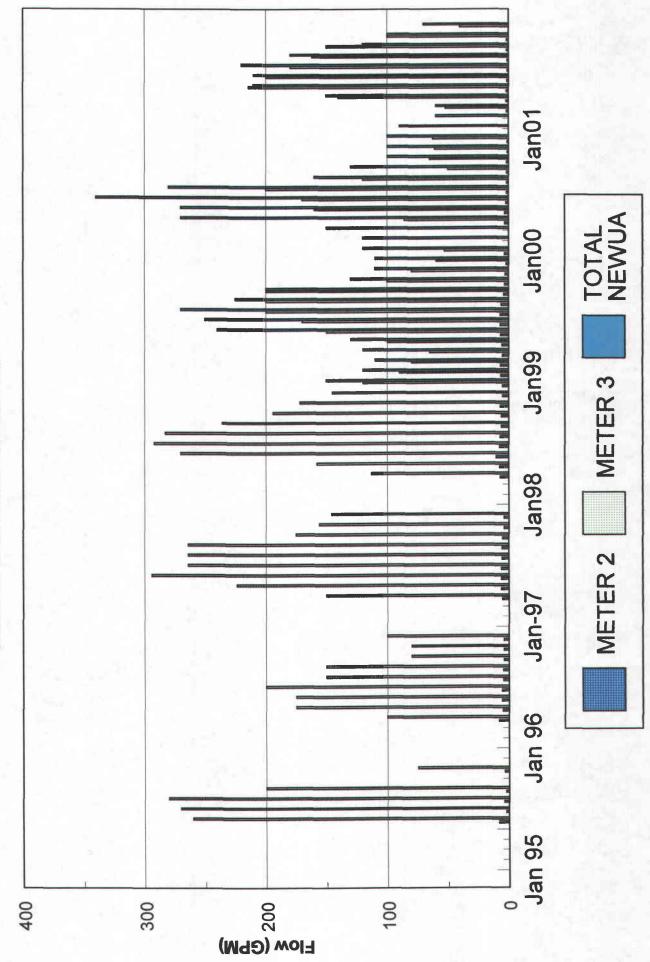


SPRING DISCHARGE vs. PALMER DROUGHT INDEX (Palmer Data - Average of Region 4 & 5) TRAIL MOUNTAIN FIGURE 3c



# FIGURE 4 (a)

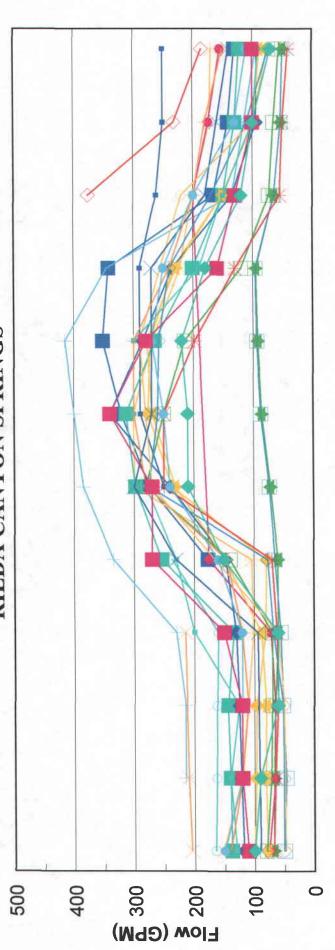
## NORTH EMERY WATER USERS ASSOCIATION RILDA CANYON SPRINGS



## FIGURE (b)

# NORTH EMERY WATER USERS ASSOCIATION

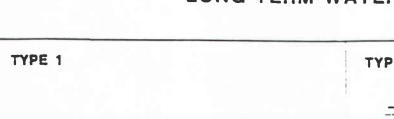
## RILDA CANYON SPRINGS

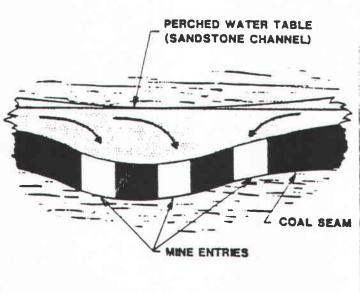


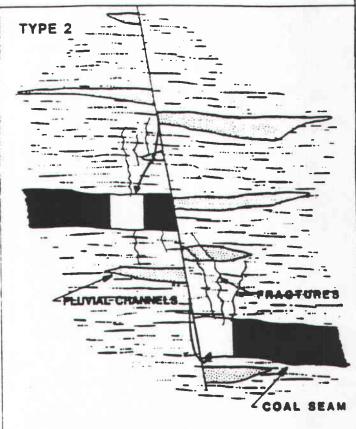
Feb         Mar         Agr           97         96         81           67         65         60           47         52         56           121         111         101           163         162         160           210         215         230           215         230         65           215         230         88           122         125         130           81         80         88           77         70         70           51         52         68           65         60         60           140         125         200           140         125         200	96 81 65 60 52 56 52 56 111 101 162 160 215 215 215 230 65 72 144 134 125 88 80 88 70 70 52 68 60 60 125 200	Mar         Aper         Milly           96         81         73           65         60         60           65         60         60           52         56         65           65         65         65           111         101         104           162         160         237           65         72         175           65         72         175           125         130         147           80         88         148           70         70         140           52         68         77           60         62         70           50         60         230           125         200         230           125         94         230	Mer         Age         May 177         Jun 275           96         81         79         237           65         60         60         72           52         56         65         74           111         101         104         299           162         160         237         250           215         230         335         385           65         72         175         240           80         88         148         231           70         70         140         280           52         68         77         275           60         62         70         250           50         60         230         280           125         200         230         280           125         200         230         300	Mar         Mar         Mar         Mar         Aut         Aut <th>Mare         Mare         <th< th=""><th>Mag         May         May         Ann         Ann</th></th<><th>May         May         May</th></th>	Mare         Mare <th< th=""><th>Mag         May         May         Ann         Ann</th></th<> <th>May         May         May</th>	Mag         May         May         Ann	May
	215 230 230 230 230 230 72 72 72 72 60 60 60 200 200	Aug. Mills.  81	Mer         MW         Jun           81         79         275           81         79         237           60         60         72           56         65         74           101         104         299           160         237         250           215         335         385           72         175         240           88         148         231           130         147         240           88         148         231           60         77         275           60         70         250           60         200         230           200         230         280           40         230         300	Age         Mary         Jun         Jun <td>Age         May 177         Jan 177         Jan 275         Ja</td> <td>Mar         Mar         Jan.         J</td> <td>Mile         Mile         <th< td=""></th<></td>	Age         May 177         Jan 177         Jan 275         Ja	Mar         Mar         Jan.         J	Mile         Mile <th< td=""></th<>
215 230 230 230 230 230 230 230 230 230 230		177 79 60 60 65 65 104 104 237 237 254 147 148 140 77 70 70 230 230 230 230 230	Miley 275 79 79 237 60 72 65 74 65 74 74 72 250 237 250 77 270 270 230 230 280	May         May         May           177         275         321           79         237         276           60         72         86           65         74         88           65         74         86           65         74         86           65         74         86           65         74         86           737         250         289           237         250         289           175         298         313           254         298         313           148         231         269           140         280         250           77         275         260           77         275         260           77         275         280           230         280         300           230         280         270           245         280         300           230         300         270           245         280         300	Miley   Mile	Miley	Mink
	177 79 60 60 65 104 237 254 147 148 140 77 70 230 230 230 145		275 237 72 74 74 74 74 74 74 74 75 76 299 299 298 298 290 290 231 280 275 270 270 280 300 280	275 321 237 276 72 86 74 88 74 88 299 301 250 289 250 289 240 340 240 340 275 260 270 280 270 280 280 250 270 280 280 250 270 280 280 250 270 280	275         321         Ass           237         276         272           237         276         272           72         86         92           74         88         94           299         301         269           299         301         269           250         289         415           240         340         285           240         340         285           240         340         285           270         250         215           270         280         250           270         280         290           280         270         270           280         270         270           280         300         300           280         300         300	275         321         352         342           275         321         352         342           237         276         272         233           72         86         92         95           74         88         94         96           299         301         269         222           290         289         222         290           250         289         289         290           240         340         415         345           240         340         285         201           240         340         285         229           231         269         278         229           275         260         278         240           270         280         278         240           270         280         290         190           280         290         190         270           280         270         270         270           280         270         270         240           280         300         300         270         240	275         321         352         342         166         1           237         276         272         233         151         1           72         86         92         95         65         65           74         88         94         96         65         2           299         301         269         222         201         1           299         301         269         222         201         1           290         301         269         222         201         1           290         301         269         222         201         1           250         289         222         201         1           240         340         245         262         200         1           240         340         285         235         155         1           280         250         215         120         7         1           280         250         215         120         7         1           280         280         290         190         150         1           280         270         270

## FIGURE 5 LONG TERM WATER SOURCES

TYPE 4

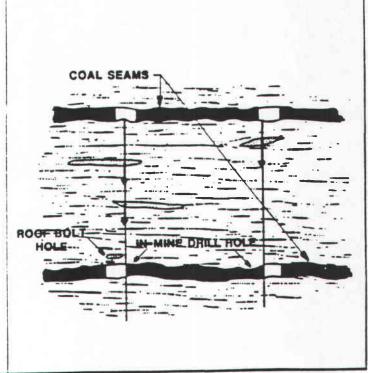


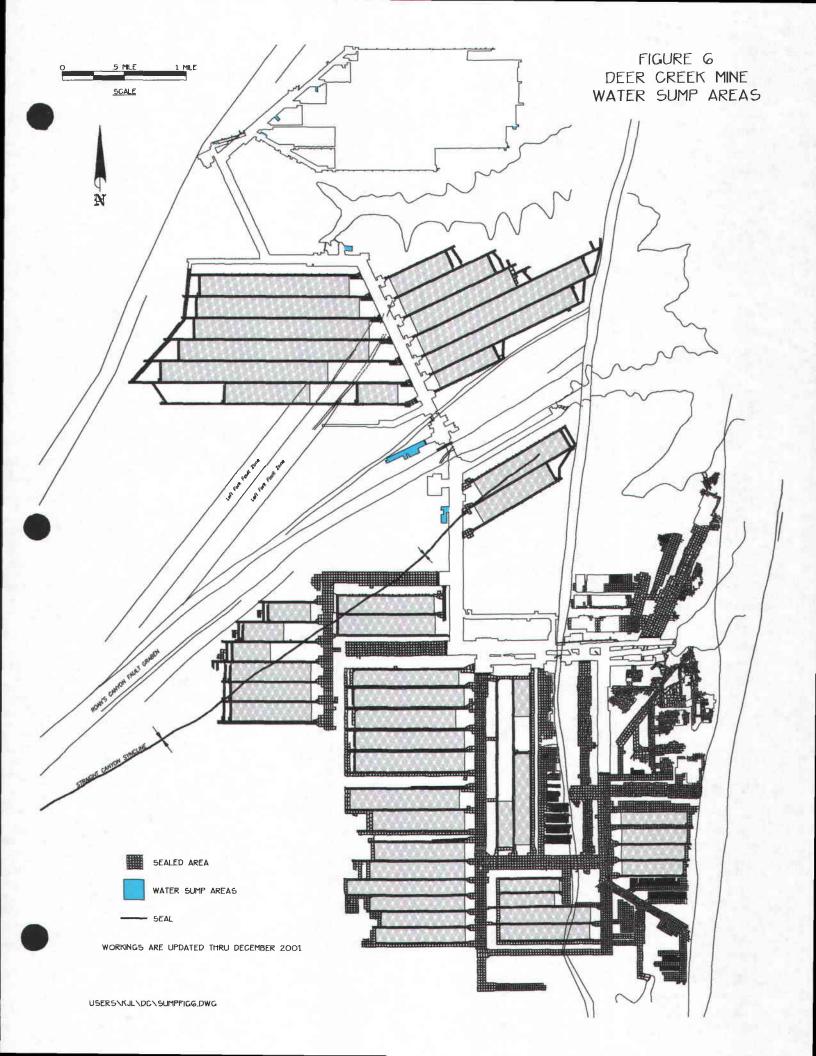


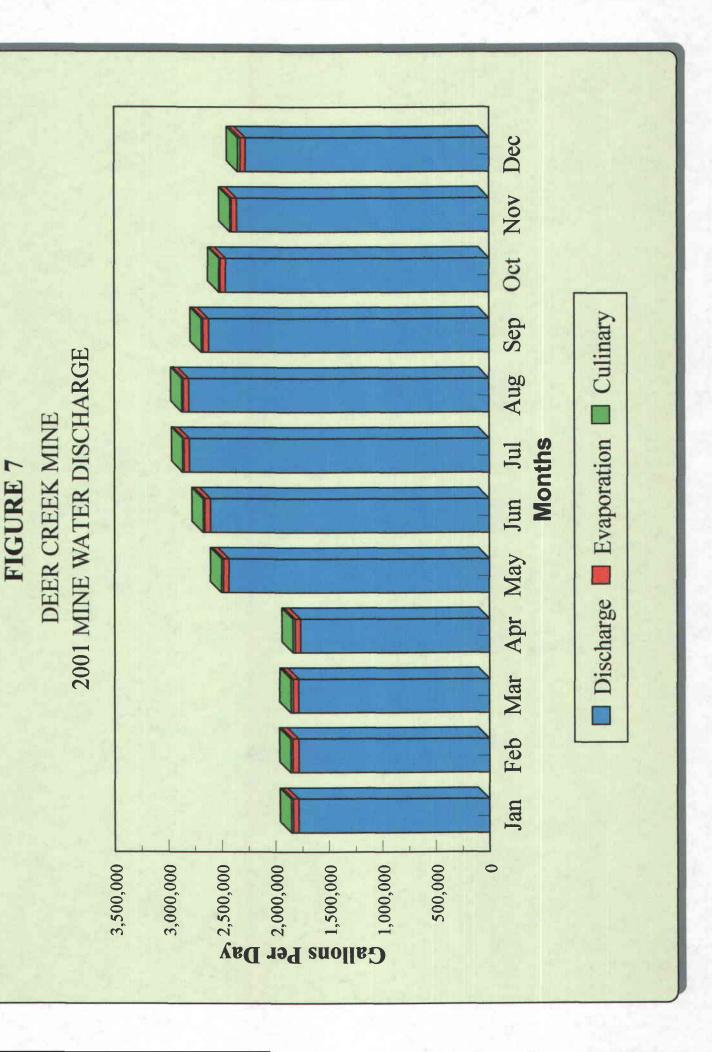


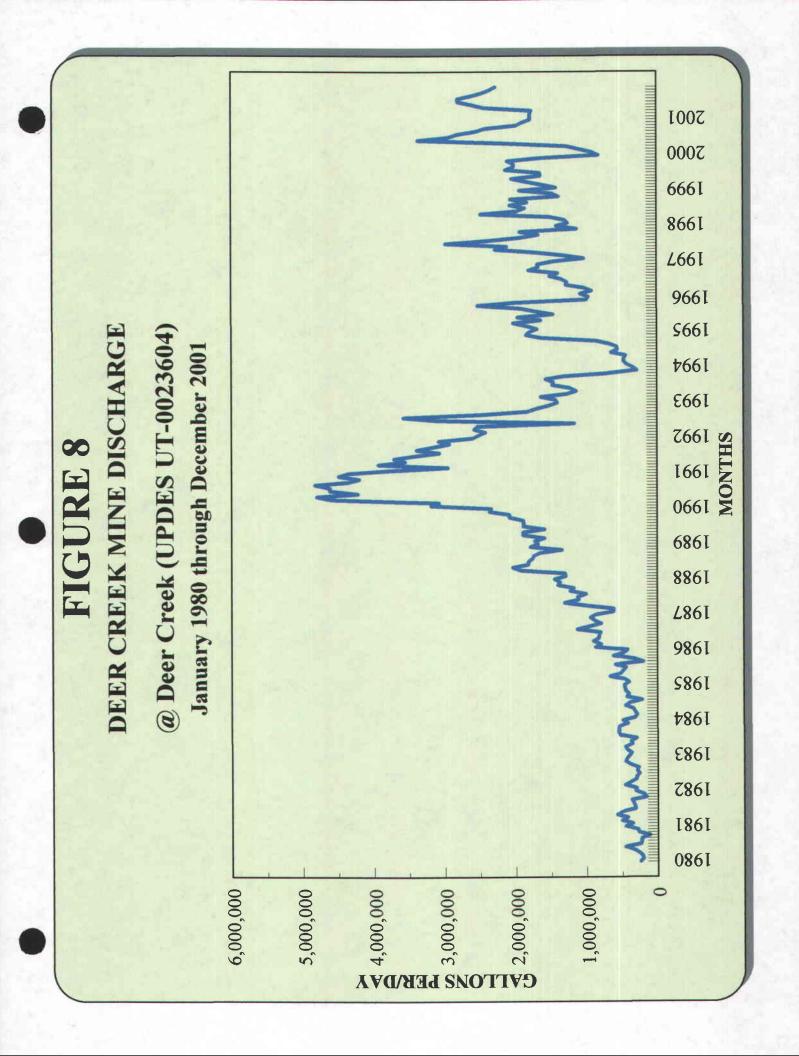
JOINTS/FRACTURES

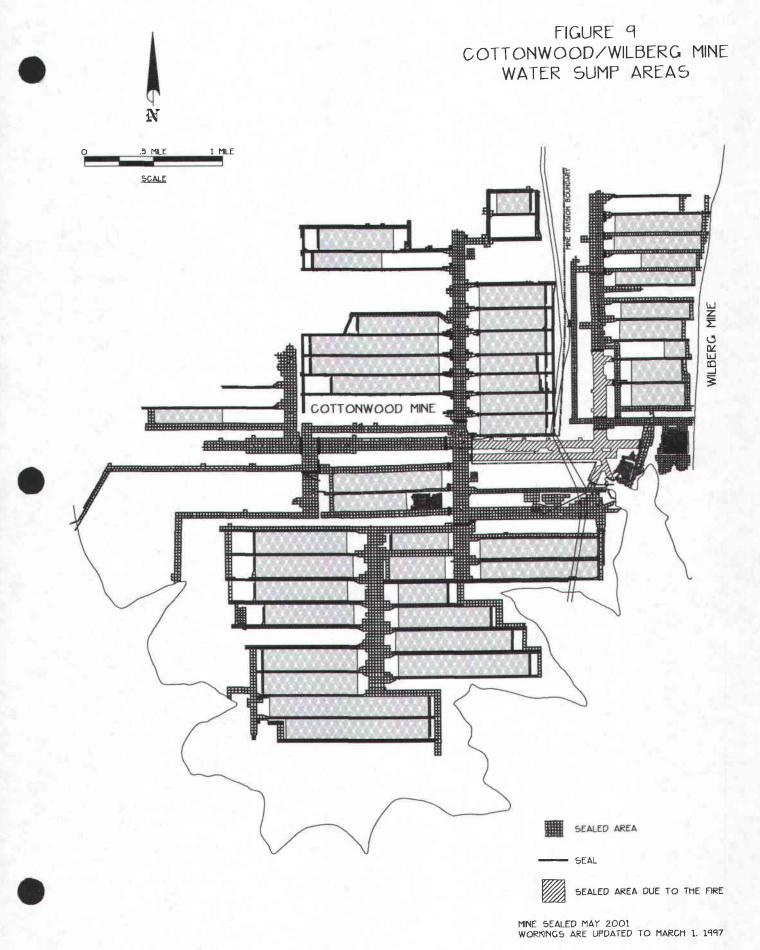
COAL SEAM



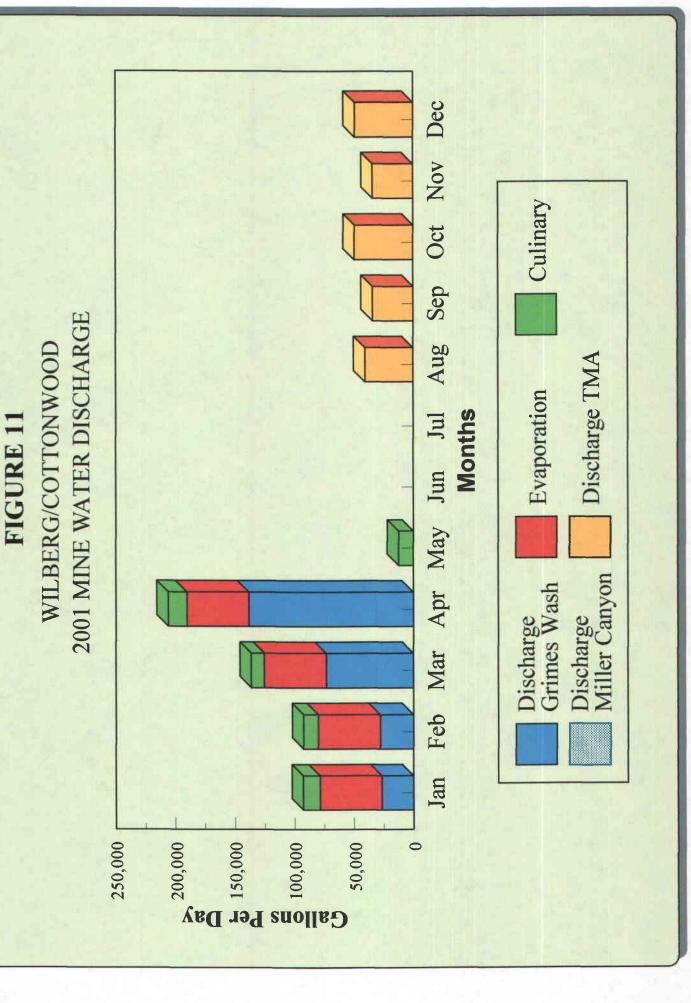


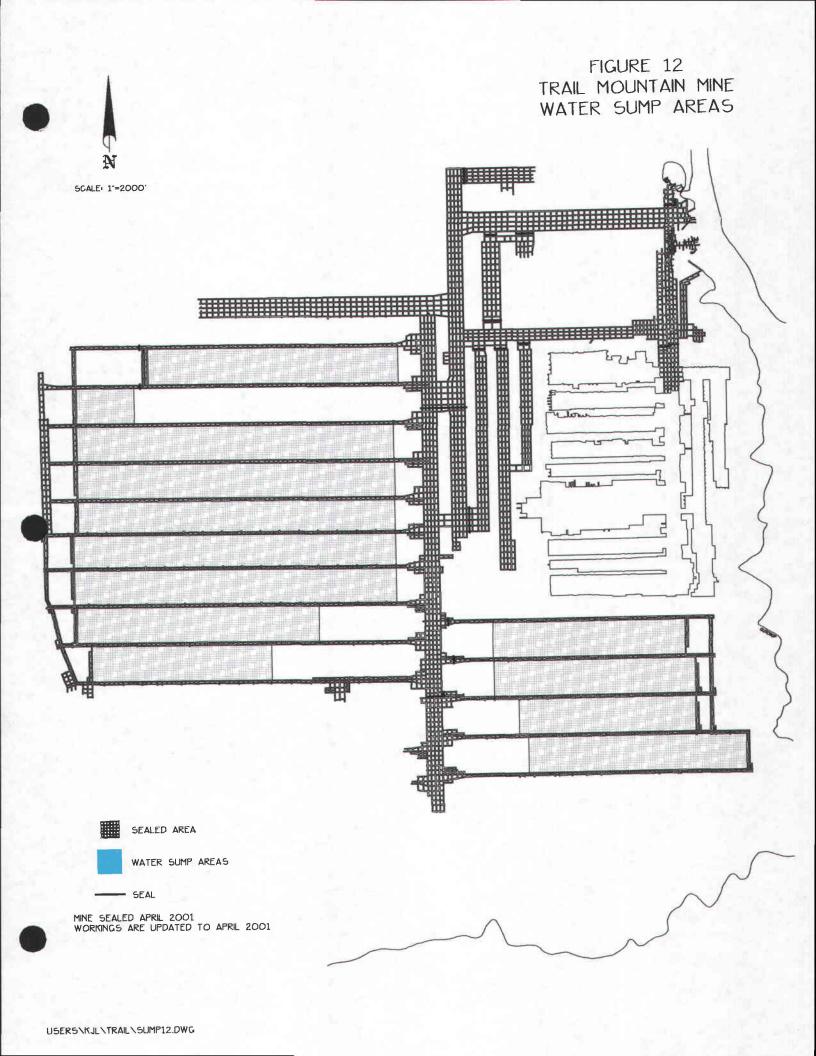






## 2001 2000 666 I 8661 WILBERG/COTTONWOOD MINE DISCHARGE **L661** 9661 566I @ Grimes Wash (UPDES UT-0022986) 766I April 1979 through December 2001 E661 7661 FIGURE 10 Months 1990 6861 8861 **L861** 9861 5861 1884 1983 1982 1861 0861 6461 Callons Per Day 3,000 ,000 ,000 6,000,000 2,000,000 5,000,000 1,000,000





## 2001 @ Cottonwood Canyon Creek (UPDES UT-0023728) January 1997 through December 2001 Trail Mountain Mine FIGURE 13 Months 1999 1998 1997 **Callons Per Day**4,000,000 6,000,000 5,000,000 2,000,000 1,000,000

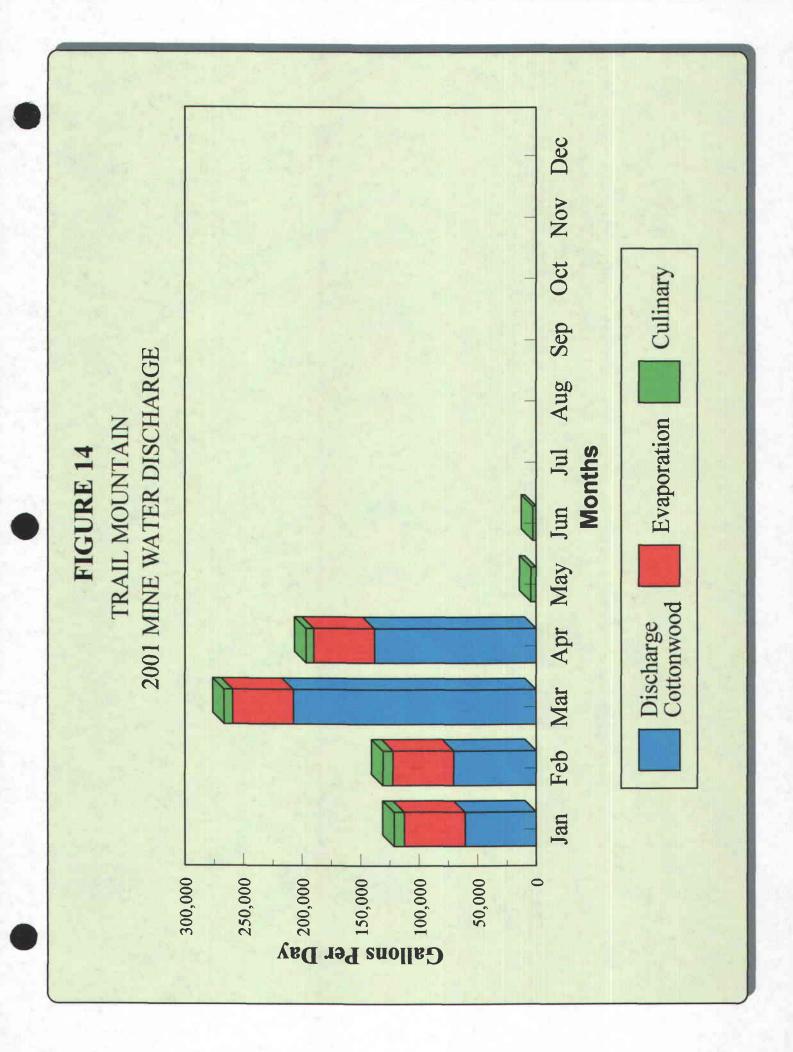


TABLE 1: PRECIPITATION IN EMERY COUNTY, UTAH (2001 Water Year)

	Hun	Hunter Plant	Huntin	Huntington Plant	Elec	Electric Lake	East	East Mountain
	(Ele	(Elev. 5800')	(Ele	(Elev. 6500')	(Ele	(Elev. 8350')	(Ele	(Elev. 8985')
	Precip. (inches)	% of Normal	Precip. (inches)	% of Normal	Precip. (inches)	% of Normal	Precip. (inches)	% of Normal
2000								
October	3.28	426	3.04	243	3.47	439	3.48	272
November	0.10	20	0.07	=	1.21	64	0.62	58
December 2001	0.04	∞	0.26	57	2.19	200	0.39	47
January	99.0	151	1.69	143	1.54	78	1.96	169
February	1.84	486	1.09	329	2.80	160	1.21	93
March	1.07	214	0.85	137	0.79	42	1.03	71
April	0.56	140	0.45	83	2.41	142	1.12	105
May	0.55	128	NR		1.49	101	1.39	148
June	0.20	45	NR		0.37	44	0.19	36
July	1.21	228	NR		1.56	131	0.58	58
August	0.36	36	NR		3.40	391	1.09	9/
September	9.65	78	NR		1.01	96	0.12	∞
TOTALS	10.52	152	7.45		22.24	115	13.17	86
Mean Monthly	0.88	I	1.06	ļ	1.85	1	1.10	l

NR - No Record

TABLE 2: COMPARISON OF 2001 AND 2000 PRECIPITATION (Inches)

2000 2001 As Amount % of Normal % of 2000	5.41 78 194	84	92
2001 % of Normal	151		
Station	Hunter Plant 10.52		

IR - Incomplete Record

TABLE 3: HUNTER PLANT PRECIPITATION Elevation - 5,800 Feet

	SEPT TOTAL								0.88 9.21																		
	$\overline{AUG}$	0.08	0.41	1.14	0.79	0.51	0.70	1.06	1.58	1.89	0.03	1.01	1.27	0.44	1.70	0.38	0.53	1.60	0.93	0.75	1.89	0.16	2.17	0.73	2.78	0.53	98 0
	TOT	0.31	1.35	69.0	0.00	0.02	0.20	0.15	2.18	1.80	1.50	0.55	1.65	69.0	1.01	0.56	0.94	0.22	0.05	60.0	0.14	0.14	1.41	0.56	0.08	0.44	1.21
	JUN	0.03	0.07	0.00	0.00	0.00	0.14	0.00	0.00	1.09	0.26	0.31	1.25	0.20	0.14	0.24	0.58	0.34	0.15	0.31	0.61	0.29	1.27	0.55	0.34	0.50	0.20
	$\overline{MAY}$	0.84	1.28	1.21	0.47	1.11	0.45	0.02	0.51	0.05	0.64	0.00	1.38	0.59	0.37	90.0	1.09	1.56	0.92	0.17	1.12	89.0	0.50	0.31	0.34	1.06	0.55
	APR	0.89	0.03	0.34	0.24	0.75	0.16	0.00	0.37	0.34	0.67	0.31	0.12	1.64	0.00	0.51	0.10	0.22	0.50	0.67	2.35	0.02	0.79	0.41	1.66	0.16	0.56
	MAR	0.00	0.00	1.74	2.43	0.67	1.48	0.54	0.84	0.34	1.01	0.40	06.0	99.0	0.23	0.71	0.77	0.87	1.18	0.01	1.13	1.60	0.00	0.00	0.00	69.0	1.07
	FEB	0.40	0.07	1.05	0.53	1.70	0.07	0.45	0.41	0.35	0.95	0.97	0.45	0.00	0.02	0.72	0.29	2.72	1.67	0.53	0.10	0.25	0.03	2.04	0.33	0.92	1.84
	$\overline{IAN}$	0.05	0.37	1.28	1.43	1.70	0.00	0.94	0.54	0.03	0.20	0.10	0.32	0.55	1.23	0.31	0.02	1.04	1.44	Ţ.	0.78	0.55	1.45	0.15	0.13	0.61	99.0
	DEC	0.19	0.00	0.00	0.22	0.41	0.05	0.45	0.45	1.07	1.24	0.42	0.10	99.0	0.48	0.03	0.19	0.14	0.78	0.08	96.0	0.10	0.46	0.20	0.00	0.00	0.04
	NOV	0.25	0.05	0.18	2.22	0.00	90.0	0.27	1.25	99.0	90.0	1.40	0.08	1.02	0.04	0.00	0.00	0.50	0.07	0.51	0.22	NA	2.34	0.46	0.93	0.00	0.10
	OCT	0.13	0.00	0.01	0.03	0.00	99'0	0.58	0.20	0.53	1.60	0.92	0.92	1.91	69.0	0.20	0.04	0.17	0.81	1.54	1.38	NA	1.04	0.20	1.69	0.00	3.28
Water	Year	<b>12-16</b>	<b>16-77</b>	77-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85	85-86	86-87	82-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	96-56	<b>26-96</b>	86-26	66-86	00-66	00-01

# TABLE 4: HUNTINGTON PLANT PRECIPITATION

Elevation - 6,500 Feet

Water													
Year	OCT	AON	DEC	JAN	FEB	MAR	APR	MAY	JUN	7.O.T	AUG	SEPT	TOTAL
10-71	;	;	1	1	ł	80.0	0.29	0.16	0.11	0.57	0.63	0.43	2.27
71-72	2.26	0.59	1.62	0.04	0.00	0.32	0.28	0.16	0.77	0.40	99.0	1.07	8.17
72-73	4.27	1.28	0.34	0.49	08.0	2.42	0.50	0.17	0.97	1.09	1.94	0.12	14.39
73-74	80.0	0.02	0.37	0.20	0.03	0.01	0.00	0.00	0.00	0.09	0.00	0.07	0.87
74-75	89.0	1.19	1.13	1.01	0.30	08.0	0.03	0.75	1.44	2.62	0.31	0.24	9.50
72-76	0.23	0.95	0.03	0.20	0.23	0.00	2.34	98.0	0.02	0.73	0.19	0.85	6.63
24-77	0.56	0.00	0.00	0.35	0.00	0.00	0.00	1.76	0.00	2.08	96.0	0.70	6.41
27-78	99.0	0.12	0.82	1.45	1.00	1.36	0.94	0.72	0.12	0.05	0.72	0.77	8.73
78-79	0.02	2.65	0.25	1.21	0.52	2.50	0.00	0.84	0.05	60.0	3.32	0.20	11.65
28-80	0.17	0.14	0.15	2.88	3.63	89.0	1.13	1.88	9.0	0.18	0.38	2.22	14.09
80-81	1.20	90.0	0.00	0.00	0.00	0.62	0.08	1.75	0.48	0.00	0.58	1.53	6.30
81-82	1.12	0.25	1.30	1.63	0.20	0.73	0.00	0.17	0.00	80.0	0.71	1.91	8.10
82-83	0.20	09.0	0.67	0.16	0.65	1.87	0.08	0.40	00.0	1.61	0.39	1.15	7.78
83-84	92.0	92.0	2.13	0.10	0.15	1.18	0.72	0.17	1.04	0.74	1.39	0.46	09.6
84-85	2.07	0.34	1.74	0.49	0.27	0.53	0.44	1.08	0.42	3.21	0.04	0.81	11.44
85-86	0.77	1.28	0.64	0.01	86.0	0.28	0.43	0.10	0.17	0.42	0.55	1.08	6.71
86-87	0.38	0.15	0.05	0.81	99.0	0.13	1.22	1.48	1.01	2.14	0.65	0.00	89.8
82-88	1.36	1.35	0.51	1.77	0.00	0.10	1.35	0.94	0.83	0.04	0.13	0.92	9.30
88-89	0.31	0.13	0.83	89.0	0.28	0.21	0.20	0.22	1.28	0.78	1.72	0.74	7.38
89-90	0.21	0.28	0.42	0.51	1.18	0.94	1.30	1.35	0.65	1.30	1.27	2.35	11.76
16-06	0.45	0.03	0.43	0.44	0.37	89.0	0.13	3.13	09.0	1.14	1.87	2.38	11.61
61-92	0.21	0.99	0.37	1.20	1.98	1.55	0.47	1.92	1.97	2.99	1.53	09.0	15.78
92-93	1.93	1.02	1.67	2.32	1.71	1.87	0.46	0.65	0.31	80.0	1.68	0.46	14.16
93-94	2.11	0.88	0.23	0.12	0.88	1.17	1.69	0.53	0.05	Лr.	2.14	1.69	11.49
94-95	1.33	0.26	0.33	1.10	0.26	1.05	2.65	2.67	1.17	0.32	2.81	1.48	15.42
95-96	NA	NA	0.90	1.10	98.0	1.52	0.46	1.41	0.72	1.15	0.19	2.18	-
26-96	69.0	1.31	0.63	1.61	0.05	0.00	0.00	1.11	1.20	2.31	3.28	2.49	15.58
86-76	1.92	0.53	0.00	1.27	1.89	0.15	1.13	1.28	06.0	1.27	1.17	1.60	13.11
66-86	2.59	2.29	0.00	0.48	0.37	0.00	2.11	0.29	0.74	1.91	3.41	1.47	15.66
00-66	0.00	0.05	0.10	0.33	1.06	0.88	0.13	0.89	1.83	98.0	2.19	08.0	9.12
10-00	3.04	0.07	0.26	1.69	1.09	0.85	0.46	NR	NR	NR	NR	NR	

TABLE 5: ELECTRIC LAKE PRECIPITATION

Elevation - 8,350 Feet

Water													
Year	OCT	<i>N</i> 0 <i>V</i>	DEC	JAN	FEB	MAR	APR	MAY	NO	JUL	AUG	SEPT	TOTAL
70-71	2.46	2.35	6.41	1.13	1.66	0.36	1.05	99.0	0.47	0.40	2.15	0.78	19.88
71-72	3.49	1.69	4.07	3.35	0.58	0.70	1.02	0.28	1.49	0.70	08.0	2.91	21.08
72-73	4.18	3.43	3.27	0.97	2.09	2.74	3.67	1.42	0.85	0.82	1.23	1.15	25.82
73-74	0.79	1.90	3.52	2.70	1.12	1.52	2.49	0.20	0.13	2.09	90.0	0.09	19.91
74-75	2.27	0.62	1.73	2.10	2.37	3.42	1.23	3.21	1.08	1.93	0.49	0.25	20.70
72-76	1.31	2.57	0.82	1.44	2.23	1.35	1.47	2.00	1.23	1.07	0.54	1.19	17.22
76-77	1.00	0.25	0.14	92.0	1.14	2.00	0.05	3.00	0.90	2.28	1.31	1.26	14.09
77-78	1.47	2.10	3.20	3.68	2.74	3.16	2.46	1.18	0.30	0.10	0.24	0.77	21.40
78-79	0.40	3.18	5.66	2.90	2.18	2.53	0.72	1.67	0.19	96:0	2.29	0.32	20.00
29-80	1.55	2.23	0.37	4.95	6.01	3.34	1.27	3.09	0.12	0.37	0.38	1.80	25.48
10-Year	1.89	2.03	2.62	2.40	2.21	2.11	1.54	1.67	0.67	1.07	0.95	1.05	20.22
80-81	1.45	86.0	0.32	1.30	1.04	3.20	1.45	3.06	0.39	1.61	2.73	1.44	18.97
81-82	4.18	1.44	4.79	5.26	1.66	90.5	1.11	1.40	0.59	1.26	2.29	5.38	34.42
82-83	1.88	3.68	2.76	2.41	4.00	4.30	2.35	2.81	1.35	1.34	1.50	2.88	31.26
83-84	2.15	4.81	7.43	1.27	1.56	2.77	3.23	1.73	3.41	2.55	2.26	1.47	34.64
84-85	2.92	2.63	3.24	1.54	1.09	3.54	1.95	1.19	0.89	3.04	0.03	4.35	26.41
85-86	4.40	6.62	1.99	1.81	8.54	2.48	3.79	1.62	0.26	1.01	1.68	2.73	36.93
86-87	1.86	1.98	0.55	2.14	2.07	2.47	1.03	2.93	0.79	2.12	1.22	0.49	19.65
87-88	1.39	1.68	3.50	3.06	0.72	3.32	2.14	1.60	98.0	1.04	2.23	1.16	22.70
88-89	1.20	2.68	1.91	1.52	1.99	3.55	0.35	90.0	1.54	1.43	1.37	1.19	18.79
89-90	1.21	1.88	0.70	2.00	4.06	2.30	2.00	0.81	1.87	1.08	0.62	1.87	20.40
16-06	1.32	0.90	1.64	1.49	1.64	4.24	3.06	2.60	0.57	1.04	1.39	2.70	22.56
61-92	1.43	2.10	0.87	0.72	2.21	1.95	0.54	1.55	1.01	0.59	1.64	1.02	15.63
92-93	1.51	1.33	3.60	5.01	4.76	2.25	2.49	2.40	1.57	0.48	1.32	09.0	27.32
93-94	2.10	2.19	0.00	1.00	4.00	1.10	2.81	0.99	0.10	0.25	0.75	2.32	18.51
94-95	2.40	4.26	1.60	3.25	1.90	3.84	3.94	5.07	2.04	1.00	2.53	1.95	33.78
92-96	1.54	1.38	3.54	5.84	3.25	3.23	1.75	1.73	06.0	1.09	0.45	2.20	26.90
26-96	1.43	2.35	3.90	4.00	1.31	0.77	1.97	2.03	1.03	0.64	1.98	4.45	25.86
86-26	2.30	1.88	2.00	3.65	3.60	2.86	1.80	1.82	2.30	2.01	1.86	1.68	27.76
66-86	3.65	2.98	1.15	4.05	1.70	1.44	4.95	2.03	1.28	2.90	3.54	1.20	30.87
00-66	0.15	0.38	1.61	4.19	4.45	1.98	99.0	2.12	2.32	0.00	2.60	1.65	22.11
10-00	3.47	1.21	2.19	1.54	2.80	0.79	2.41	1.49	0.37	1.56	3.40	1.01	22.24

NOTE: Climatic Station was moved from a point one mile above the dam site to a point 500 feet below dam site on November 15, 1973.

October, November, and December 70-71 were estimated by correlation with Clear Creek Weather Station.

TABLE 6: EAST MOUNTAIN PRECIPITATION

Elevation - 8,985 Feet

																			14.18					
	TOTAL	10.90	14.57	19.71	14.53	17.02	14.92	13.73	14.61	10.59	10.90	14.15	12.69	11.74	14.37	11.33	16.46		75 27.11		14.73	10.16	13.39	13.17
	SEPT	2.55	2.61	1.62	0.64	2.31	1.63	90.0	0.91	0.49	1.62	1.44	3.11	0.35	0.14	1.49	0.62	3.46	2.43	2.16	0.78	96.0	1.50	0.12
	AUG	0.85	1.10	4.83	2.33	0.12	2.24	1.16	96.0	2.44	1.03	1.71	1.48	0.48	0.82	0.83	1.52	0.35	1.30	0.57	2.24	2.03	1.43	1.09
	7.O.F	0.57	1.86	1.27	1.90	2.47	0.87	2.49	0.45	1.19	0.88	1.40	1.01	0.85	0.04	0.10	0.34	0.58	0.15	0.78	2.08	0.03	1.00	0.58
	JUN	0.11	0.09	0.61	1.18	0.28	0.53	0.58	0.81	0.43	0.67	0.53	0.21	0.95	0.19	0.39	1.19	0.30	0.15	0.04	1.21	0.59	0.53	0.19
	MAY	0.87	0.45	0.71	0.22	1.73	0.38	1.77	1.03	0.47	0.26	0.79	1.83	2.19	0.72	0.36	2.29	1.14	0.91	0.37	0.36	0.72	0.94	1.39
	APR	0.64	0.00	0.92	0.50	1.35	1.05	1.16	2.08	0.26	1.03	06.0	0.59	0.56	0.33	2.65	3.75	0.21	0.40	0.81	2.82	0.15	1.06	1.12
	MAR	2.77	1.67	1.98	1.22	1.77	1.43	1.65	0.99	1.03	1.75	1.63	2.34	2.39	2.01	0.34	0.79	2.23	0.00	0.71	0.07	1.56	1.43	1.03
	FEB	0.52	0.14	1.81	9.0	0.59	2.10	1.37	0.00	89.0	2.08	0.99	0.39	1.73	2.34	1.35	99.0	1.18	1.56	3.34	0.34	3.27	1.30	1.21
	JAN	0.29	3.22	1.30	0.27	0.49	0.30	1.37	1.42	1.00	0.74	1.04	0.34	0.61	4.10	0.32	1.37	1.39	2.49	0.97	0.75	0.48	1.16	1.96
	DEC	0.05	0.97	1.39	2.42	1.67	0.87	0.16	1.29	1.56	0.16	1.05	99.0	0.07	1.53	0.14	0.65	0.64	1.66	0.23	0.00	0.28	0.82	0.39
	NOV	0.39	0.53	2.90	2.43	0.97	2.38	0.39	1.91	0.43	0.39	1.27	0.26	1.07	0.57	1.12	1.42	0.46	1.63	0.84	1.08	0.05	1.06	0.62
	OCT	1.28	1.93	0.38	92.0	3.27	1.15	1.57	2.77	0.61	0.28	1.40	0.48	0.49	1.57	2.23	1.86	0.18	1.50	0.24	3.01	0.04	1.28	3.48
Water	Year	18-08	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-88	89-90	10-Year	16-06	91-92	92-93	93-94	94-95	95-96	<b>26-96</b>	86-26	66-86	00-66	20-Year	10-00

TABLE 7: TEMPERATURES IN EMERY COUNTY, UTAH (2001 Water Year)

	Hunt	Hunter Plant	Hunting	Huntington Plant	Electr	Electric Lake	East M	East Mountain
2000	Average Temperature*	Departure From Normal						
October	52.0	9.0	47.8	-1.6	35.6	-2.0	43.8	3.7
November	33.0	2.2	28.4	-7.6	17.0	-9.3	25.5	-3.5
December	31.6	4.9	26.8	9.0-	17.2	1.4	15.6	-6.0
2001								
January	25,4	1.3	27.6	1.0	12.0	-2.6	13.0	-9.2
February	29.4	1.0	26.2	-4.0	17.3	-2.0	13.2	-11.5
March	44.8	0.6	39.6	1.9	25.2	4.4	22.2	-7.8
April	49.8	2.2	45.0	-1.1	31.7	3.0	28.2	-8.5
May	61.6	9.5	NR		45.5	6.5	41.0	-3.9
June	70.4	9.0	NR		52.3	3.7	50.2	-6.0
July	73.2	4.8	NR		55.4	-0.3	58.1	-5.4
August	73.6	7.2	NR		56.7	2.9	53.6	-8.7
September	67.4	15.5	NR		48.6	1.1	51.1	-1.9
AVERAGE	51.0	5.6			34.5	9.0	34.6	-5.7

<sup>\*</sup> Temperatures reported in degrees Fahrenheit.

TABLE 8: COMPARISON OF 2000 AND 2001 TEMPERATURES\*

	75	2001	20	2000	2001
Station	Average Temperature	Average Departure emperature From Normal	Average Temperature	Average Departure Temperature From Normal	Departure From 2000
Hunter Plant	51.0	5.7	53.6	7.8	-2.6
Huntington Plant	IR		51.0	3.1	
Electric Lake	34.5	1.4	36.1	2.1	-1.6
East Mountain	34.6	-5.7	46.1	5.5	-11.5
Average Departure From Normal		0.5		4.6	-5.2

<sup>\*</sup> Temperatures reported in degrees Fahrenheit.

IR - Incomplete Record

# TABLE 9: HUNTINGTON CREEK WATER FLOWS (2001 Water Year)

	Huntington Creek Below Electric Lake*	Huntington Creek At Plant*	Calc. Natural Flow at Plant
Total Yearly Flow (Acre Feet)	14,992	40,090	45,994
% of Normal	69	59	99
Mean Discharge in Cubic Feet Per Second (CFS)	20.7	55	
Maximum Discharge (CFS)	82.1	221	
Date of Maximum Discharge	09/12/2001	05/17/2001	
Minimum Discharge (CFS)	11.8	12.3	
Date of Minimum Discharge	01/27/2001	12/09/2000	

<sup>\*</sup>Influenced by upstream storage in Electric Lake.

TABLE 10: COMPARISON OF 2000 AND 2001 RUNOFF VALUES

	2(	2000	20	2001	
	Amount	% of Normal	Amount	% of Normal	2001 as a % of 2000
Spring Runoff Stored in Electric Lake (Acre Feet)	5,022	48	4,424	43	88
Calculated Natural Flow 11 Plant (Acre Feet)	59,716	84	45,994	65	77

TABLE 11: HUNTINGTON CREEK WATER QUALITY \* HCC01 - ABOVE POWER PLANT

20010314	20010913	20011213	2001**	NIN ?	MEAN	Media	No. of Analysis	MIN	MAX	MEAN	MIN	MAX	MEAN	1998**	MAX	MEAN	1997**	MAX	MEAN	966I	MAX	MEAN	2661 NIM	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN	1992 MIN	MAX	MEAN	1991	MIR	MEAN	HISTORICAL 1991-2000	MIN	MAX	MEAN
							4													9.0	20.0	14.5	10.0	10.0	10.0	10.0	10.0	10.0	0.0	3.0	9.0		17.0	2.1	-	0.10	2. 4. 5. 8.	91-2000	0.1	25.0	5.1
251 194	120	265	į	170	790	277	4	176	254	216	185	275	225	126	268	210	174	282	217	167	246	200	165	255	204	173	249	211	159	253	210	180	281	224	201	192	227		126	400	224
£ 5	£ £	28	:	. 43	8 9	3	4	14	57	20	45	28	15	46	55	50.5	36	53	48	460	640	54.3	47.0	57.0	53.3	40.0	57.0	9.05	32.7	76.4	51.6	403	80.7	6.09		17.0	649		32.7	102.6	57.3
\$	1		,	un u	n 4	<b>n</b>	4	9	9	9	9	9	9	٠	38	21	œ	) <b>0</b> 0	<b>∞</b>	19.0	24.0	22.0	0.5	15.0	10.0	1.0	5.0	2.0	0.0	6.0	1.2	-	909	2.4	ć	0.5	1.9		0.1	38.0	4.3
15 5	0	01	,	v ;	2 5	2	4	m	81	6	7	01	7	1	1	7	<b>~</b>	4	6	20	16.0	10.5	40	14.0	9.0	2.0	30.0	10.6	10	20.0	9.7	9	25.0	13.8	ć	0.0	45.0 21.5		0.1	45.0	13.1
574 413	348	205		348	5/4	434	4	304	490	398	305	200	401	346	475	412	303	476	377	304	533	410.5	787	4 1	360.5	310	484	379	60£	640	410	900	475	385	č	017	341		210	640	391
12.20	11 10	13.60		11.10	13.60	12.30	3	5.40	12.00	85.6	00.9	7.90	09'9	5.5	9.2	7.15	6.50	9.60	7.98	8 80	11.60	10.33	3.80	9.20	6.75	6.2	6.6	7.8	43	10.5	7.1	0	0.0	8 1.8	·	1.7	6.0I 8.6		3.8	12.0	 
231	153	248		153	248	707	4	148	233	193	158	252	201	164	225	198	130	229	179	79	263	210.25	1,71	228	203.75	149	235	193	8	275	202	-	786	234		681	245 245		118	392	220
0.10	0.50	3		0.10	0.50	0.30	4	0.20	0.20	0.20	010	06.0	0.43	00	0.5	0.3	010	13.30	4.57	80 0	09:0	0.39	91	1.40	0.58	0.10	0.20	0.19	50.0	0.25	0.14	5	0.0	0.03		00.0	90.0		10.0	13.30	0.44
							4																91	0.10	0.10	0.20	09'0	0.28	010	1.95	0.54	3	0.01	60.0		0.00	0.14		0.01	0.25	0.10
24	± =	25		= 3	2 5	6	4	=	: 23	11	11	26	18	2	: 22	17.5	9	21	15	12.00	25.00	18.25	9	22.00	17.50	11.00	23.00	16.42	00 6	25.60	17.82	-	30.00	19.80		12.30	33.30 20.03		9.00	44.70	18.60
							4																010	0.10	0.10	0.10	0.20	0.14	000	0.20	09'0	6	0.01	0.02		000	0.03		0.01	0.30	0.07
							4													0.0	2.0	2.0	v	5.0	9.0	5.0	7.0	5.3	0	5.0	1.2		3.7	60	•	0.0	5 <u>7</u>		0.1	7.0	2.5
8.43 2	10.8	8.44		8.43	19:8	8.32	4	8 28	8.53	8.39	8.05	8.49	8.34	7.37	8.65	8.06	8	8.50	8.35	38	8.54	8.45	9	8.81	8.56	8.17	888	8.60	7.80	9.17	8.42	5		8.58	;	1.7	8.1 8.1		7.10	8.90	8.37
2		_		(	N 6	7	4	_		-	2	2	2	-		-	_		_	8	2.00	1.40	5	2,00	1.25	1.00	5.00	3.00	000	2.00	0.71		3.17	0.54		0.00	4.52 0.91		0.01	5.00	1.34
15	י יכ	9 9		٠ ;	2 0	у.	4	2	13	7	4	10	<b>∞</b>	v		6.25			۰		11.00			8 1			11.00			_		3	23.00	8.09			4.57			55.00	
45	0 7	42		<u> </u>	5 45	e E	4	9	36	22	7	- 17	23	17	28	22.25		33			38.0			29.0			40.0			0.09			0.07				36.8			_	
11		7 283		7 196			4		27 285			111 305	37 239		100 275	34 2		504 250		50 157	32.0 272			70.0 260			40.0 280		1		25.9 228		75.0 769				85.0 369 17.7 243				23.10 230

Quality parameters are reported as mg/l unless otherwise noted.
 Data: Database input restricted to values greater then laboratory minimum detection limit.

HCC02 - @ POWER PLANT (BELOW DEER CREEK CONFLUENCE) TABLE 12: HUNTINGTON CREEK WATER QUALITY \*

2001** SAMPLE DATES	ACIDITY	ALKALINITY BICARBONATE	CALCIUM	CARBONATE CHIORIDE	CHLORIDE	CONDUCTIVITY	DISSOLVED	HARDNESS	IRON	IRON	MAGNEGITM	MACNESITIM MANGANESE	OIL &	PH (units)	MILISOTTO	Sonifie	SHI FATE	ž	F
20010314		757	53	THE PARTY OF THE P	200	643	12.10	220	1	12305450	TO STORY	MANGANESE	ONEUDE	- 1	LOISSION	SCOLOM	SULFAIR	2 2	٦'
20010314		(5)	<u>ر</u>		67	745	17.10	687	0.10		9			8.30	7	77	25	7	٠,
20010627		161	45	∞	9	432		174	0.40		15			8.60		9	19	30	ñ
20010913		172	4		6	36 45	8.	159	09.0		12	0.05		8.65		9	91	33	7
20011213		284	59		32	230	14.20	259			27			8.46	2	23	51	6	338
2001																			
W		172	44	œ	9	364	11.00	159	0.10		12	0.05		8.30	2	9	91	6	200
MAX		284	29	œ	32	642	14.20	259	0.60		23	0.05		8.65	7	23	25	33	m
MEAN		226	20	∞	61	207	12.43	207.75	0.37		70	0.05		8.50	7	14	35	21	ñ
No. of Analysis	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4
2000**																			
MIN		175	4	٠	\$	316	5.90	148	0.10		11			8.27	_	e	14	15	=
MAX		279	9	5	34	587	11.90	261	0.20		27			8.52	2	22	9	27	339
MEAN		226	50	\$	17	456	10.03	206.5	0.17		20			8.36	. 7	12	36	21	257
1999**									;		ì			9	1	!	)	i	ì
MIN		188	45	v	,	311	6.20	158	0.00		=			9 35	·	-	۰	٧	-
MAX		285	; 2	. 4	. ≃	203	04.0	26.	07.0		: :			25.0	4 (	- 7	9		2,7
MFAN		232	. 5	2 5	2 =	442	20.5	210 5	0.70		3 7			0.30	۱ ,	; =	8 8	= =	2 6
##8601			}	2	:	į	8	2777	÷		7			ř.	4	2	ţ	F	3
1228		5	ţ	,	,	,		Š	•		:					,	:	,	1
MIN		751	<del>,</del> 5	; م	) ه	333	0.10	4/1	0.10		<u>.</u>			697	<b></b>	- :	<u>-</u>	- ;	77
MAX		265	8 6	37	62 :	562	9.20	448	0.40		25			8.56	5	<u>~</u>	38	09	323
MEAN		710	75	57	2	453.25	8.03	259.75	0.20		20			8.12	2	Ξ	21	52	50
1997**		į	;	,	,	;													
MIN		175	0	7	S	309	6.20	141	0.20		01			8.20	-	4	13	81	1
MAX		292	26	7	01	491	09.6	230	11.50		22			8.52	-	×	35	490	260
MEAN		221	47	7	••	384	7.93	177.00	4.00		15			8.35	-	9	20	171	20
1996**																			
MIN	0.9	174	46.0	12.0	0.9	304	7.70	164	0.10		12.00		3.0	8.37	1.30	3.00	8.0	5.0	91
MAX	26.0	279	64.0	20.0	17.0	522	11.70	267	09.0		26.00		3.0	8.56	2.00	11.00	42.0	32.0	278
MEAN	16.0	210	54.3	14.7	11.0	407.5	10.00	211.25	0.40		18.50		3.0	8.45	1.65	6.75	23.8	18.3	22
1995																			
MIN	10.0	160	46.0	5.0	4.0	283	3.80	4	0.10	0.10	12.00	0.10	9.0	7.97	1.00	4.00	10.0	10.0	~
MAX	10.0	250	64.0	15.0	14.0	442	7.80	230	1.60	0.10	22.00	1.00	5.0	8.89	2.00	11.00	31.0	0.001	260
MEAN	10.0	201	55.5	10.0	9.5	357	6.43	213	0.63	0.10	17.50	0.33	5.0	8.50	1.50	7.25	20.5	40.0	210
1994																			
MIN	10.0	176	46.0	1.0	1.0	313	5.0	156	0.10	0.20	10.00	0.10	5.0	8.30	2.00	3.00	10.0	4.0	9
MAX	10.0	250	28.0	5.0	12.0	490	6.6	240	0.20	0.50	23.00	0.20	5.0	8.98	10.00	12.00	50.0	30.0	8
MEAN	10.0	212	52.5	2.1	6.7	386	7.5	200	0.19	0.25	16.58	0.14	5.0	8.62	3.36	6.50	23.3	13.5	221
1993																			
MIN	0.0	151	32.0	0.0	1.3	413	3.1	129	0.05	0.11	8.00	00.00	0.0	8.24	00.0	3.40	4.0	8.0	9
MAX	1.0	250	78.1	0.9	35.0	535	8.2	288	0.20	2.00	28.00	0.20	5.0	8.96	4.00	23.00	20.0	0.86	36
MEAN	0.1	506	53.8	1.4	13.3	418	5.9	500	0.11	0.40	18.23	0.07	Ξ	8.67	1.08	11.10	28.4	25.8	254
1992																			
MIN	0.1	195	40.1	0.1	10.0	328	6.4	183	0.01	0.01	8.40	0.01	0.1	7.89	10.0	1.52	14.0	2.0	~
MAX	33.0	285	82.9	7.0	25.0	604	8.6	334	0.19	0.25	35.30	0.07	2.7	8.97	3.42	21.85	0.06	28.0	371
MEAN	4.5	239	63.2	2.1	17.5	456	7.8	255	0.05	60.0	23.54	0.02	9.0	8.64	0.97	11.25	45.6	12.1	23
1991																			
MIN	0.0	183	49.1	0.0	10.0	210	5.8	179	0.00	00.0	13.76	00.00	0.0	7.5	00.0	2.00	15.0	3.0	174
MAX	14.0	300	83.1	1.0	45.0	700	10.3	353	0.21	0.32	35.30	0.70	5.1	8.5	4.90	22.94	130.0	77.0	4
MEAN	2.1	233	9.69	8.0	25.0	406	8.4	263	0.04	0.13	21.55	0.02	1.5	8.1	1.31	10.00	55.0	9.61	27
COOK FOOT IT CHACKET	9																		
HISTORICAL 1991-20		131	0.00		-	916		5			0	i	;	;					
N A	33.0	310	27.0	37.0	0.7	202	0.5	671	5 5	10.0	9.6	10.0	5 5	41.7	10.0	96		3 6	
MFAN	5.6	226	59.4	37.0	14.8	8 5	7.0	235	06.17	0.0	39.36	90.0	7. 7.	9.98	3.5	00.62	20.0	32.00	674
	ì	ì		į		ĝ.	<u>}</u>	ì	1	2	66.74	8	ŗ	6.0		1		3	
No. of Analysis	29	78	78	2	11	88	88	78	11	57	78	55	54	88	61	78	78	82	88

<sup>\*</sup> Quality parameters are reported as mg/l unless otherwise noted. \*\* Data: Database input restricted to values greater then laboratory minimum detection limit.

## TABLE 13: HUNTINGTON CREEK WATER QUALITY \* HCC04 - @ RESEARCH FARM

	20010514		20011213															MEAN			MEAN			MEAN			MEAN					MAX							MEAN	V			Ne. of
ACIDITY								4														ć	23.0	16.0	9	10.0	10.0	10.0	0.01	0.01	0.0	0.9	6.0	0.1	25.0	4.0	0.0	8.0	1.6	HISTORICAL 1991-2000	0.1	25.0	-
BICARBONATE	257	181	294		181	232		4	į	5/1	7.75 2.75	677	188	275	228	96	266	203	ì	175 175	215		160	200	Š	750 250	200	176	250	213	130	269	214	201	326	250	187	317	233		8	326 228	077
M	δ <del>4</del>	5 4	29	,	o 6	2.5	,	4	ę	42	7 C	3	45	2	<b>5</b>	46	57	25	5	<del>6</del> 6	48	•	0./4	56.0	9	65.0	57.5	40.0	0.40	54.0	35.3	82.3	57.0	42.4	92.0	67.2	40.6	88.3	71.2		35.3	108.1	5
CARBONATE CHLORIDE	v	n		,	n v	v	1	4	,	<b>20</b> (	90 O	<b>5</b>	7	<b>∞</b>	<b>∞</b>	81	. 4	31	,	vo v	'n		33.0	23.7		0.5	11.3	01	5.0	2.1	0.0	0.9	1.8	0.1	10.0	2.2	0.0	1.0	8.0		0.1	44.0	ř
CHLORIDE	€ ∝	° 2	: 15	•	∞ ∵		i	4	•	7	32.	2	3	33	81	œ	36	70		۲ ۶	12	,	0.0	15.0	4	0.0	13.8	0,	30.0	11.7	8.5	61.2	21.3	10.0	30.0	9.61	10.0	45.0	25.4		2.0	61.2	7.01
(umhos/cm)	685 429	382	727	;	382	75,5	2	4	į	328	640 82	† 0 †	316	889	482	198	613	476	;	365	444		318	443.75	;	311	409.25	3.24	610	432	297	729	462	354	762	516	220	8	410		220	762	404
OXYGEN	1.80		11.50	;	11.50	99:11	8	2	į	6.50	0.80	20.0	9009	7.60	6.75	7 10	8.70	8.05	į	6.50	8.03		08.7	86.6		6.20 8.50	6.83	٤,	9.6	7.6	2.2	7.6	5.4	43	9.6	7.5	99	10.0	8.1		4.5	11.8	۲.۷
HARDNESS	259	77	303		168	505 777	;	4		4	268	C/-	162	308	228	891	249	216		145	186	. !	791	221.5	į	9/1	225	951	275	213	149	310	235	194	397	276	163	393	278		145	397	647
اد	0.10	030	3		0.10	0.00	07:0	4	:	0.20	0.20	07.0	0.20	06:0	0.50	010	080	0.43		0.10	3.50		0.08	0.39		0.10	0.63	91.0	0.20	0.19	0.05	0.37	0.14	100	0.19	90.0	000	0.15	0.04		0.01	10.10	/#0
DISSOLVED								4																	;	0.0	0.10	010	08.0	0.29	0.14	2.46	68.0	10 0	1.12	0.18	9	10.00	0.94		0.01	0.37	2
MAGNESIUM	29	<u> </u>	33		: 13	3 2	3	4		12	53	7	12	36	23	<u>-</u>	5 92	7 7 7		11	91	: ;	12.00	20.00	;	13.00	19.75	9	28.00	19.00	9.90	33.00	22.67	12.80	41.80	26.19	13.70	42.00	24.43		6.90	42.00	OC 77
MANGANESE								4																		0.10	0.10	ç	0.20	0.14	0.00	0.20	0.05	100	80.0	0.02	000	800	0.02		10:0	0.30	/00
GREASE								4														į	2.0	20		5.0	5.0	Ç.	5.0	5.0	0.0	5.0	0.7	10	2.8	9.0	0	) <b>x</b>	8.0		0.1	5.0	7.4
PH (units) POTASSIUM	8.39	8.39	8.36		8.36	8.46	0 1.0	4		8.35	8.45	0.30	8.39	8.58	8.48	10 8	8.45	8.25		8.22	8.37		8.36	8.42		7.90	8.47	-	8.94	8.61	7.82	8.97	8.66	7.35	8.89	8.51	7 70	8.50	8.20		7.35	8.94	04.8
OTASSIUM	7		7		7 7	٦,	7	4		7	7 6	7	2	. "		ŗ	۰,	1 7					8.6	1.33		9 2	1.25	9	5.00 5.00	3.25	0.00	2.00	1.03	100	3.59	0.97	0	4 70	1.20		0.01	10.70	7.8
¥	27	ю o	35		∞ ⊱	3 5	3	4			53	2	2	75	12	4	2	1 4		ر د د	<u>t</u> ∞	,	5.00	9.75		3.00	10.25	5	21.00	9.92	4.60	58.60	16.64	3.06	22.35	19.91	3 79	28.78	12.78		2.00	58.60	3
SULFATE	89 7	<b>4</b> 6	87		3 20	à \$	3	4		17	4.	<del>.</del>	6	86	46	4	27	39		17	30		16.0	35.5		15.0	37.0	9	80.0	34.5	17.0	110.0	8.5.8	19.0	170.0	78.3	17.0	170.0	70.8		0.6		
TSS	∞ ⊱	8 5	3 6		∞ ⊱	67 21	<u>•</u>	4			31 371		6 182		44 289	717	_			15 200			5.0 180	7		5.0 180	35.0 230		33.0 360		0.0		26.1 285	1.0	37.0 469	15.0	7.0 187		22.7 309			458.00 469	

Quality parameters are reported as mg/l unless otherwise noted.
 Data: Database input restricted to values greater then laboratory minimum detection limit.

## TABLE 14: DEER CREEK SURFACE WATER QUALITY \* DCR01 - ABOVE THE MINE

	317 321 321 321 322 323 325 316 328 328 328 329 329 329 329 329 329 329 329 329 329	317 321 319 2 325 316 326 327 328 329 331 361 280 280 280 280 280 280 280 280 280 280	317 321 319 2 325 316 326 327 328 327 329 331 361 280 280 280 280 280 280 280 280 280 280	SAMPLE DATES 20010629 20010913	ACIDITY	ALKALINITY BICARBONATE 321 317	i	- 1	CALCTUM CARBONATE 46 41 8	CARBONATE CHLORIDE 5 7	- 1	5 620 7 662	CHLORIDE         (υπλουζεπ)         HARDNESS         TOTAL           5         620         222         0.20           7         662         226         0.20	CHLORIDE         (umhoa/m)         HARDNESS         TOTAL           5         620         222         0.20           7         662         226         0.20	CHLORIDE CUMPACHUTI HARDNESS TOTAL DISSOLVED  5 620 222 0.20  7 662 226	CHLORIDE (umhou/cm) HARDNESS TOTAL DISSOLVED  5 620 222 0.20  7 662 226	CHLORIDE Cumbolcan) HARDNESS TOTAL DISSOLVED MAGNESIUM MANGANESE 5 620 222 0.20 26 26 30 30	CHLORIDE Cumbolcan) HARDNESS TOTAL DISSOLVED MAGNESIUM MANGANESE 5 620 222 0.20 26 26 30 30	CHLORIDE (umbodem) HARDNESS TOTAL DISSOLVED MAGNESIUM MANGANESE 5 620 222 0.20 26 30 30	CHLORIDE (umbascin) HARDNESS TOTAL DISSOLVED MAGNESIUM MANGANESE GREASE PI 5 620 222 0.20 26 30 30	CONDUCTIVITY   HARDNESS TOTAL DISSOLVED MAGNESIUM MANGANESE GREASE PH (units) POTASSIUM   5 620 222 0.20 26 30 30 8.72 8.72 8.72
319 44 319 44 317 319 44 325 2 2 337 39 316 40 326 45 328 48 327 44 329 44 329 44 329 44 339 47.0 339 47.0 341 288 52 284 48 10 280 56 10 280 59 10 335 59 10 335 59 10 335 59 10 335 59	307 44 307 39 307 39 325 41 316 40 328 48 327 44 318 48 329 43.0 329 43.0 329 44 301 53 279 44 301 53 279 44 48 288 52 284 48 50 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 383 593 0.0 335 593 0.0 335 593	319 44  2 2 2  337 39  328 41  316 40  328 48  327 44  229 44  229 44  2301 53  227 44  288 52  280 56  280 56  280 56  280 56  280 56  280 56  331 335 59.3  331 58.9	319 44  2 2 2  307 39  326 45  328 48  327 44  328 48  329 47.0  393 47.0  393 47.0  393 47.0  301 53  202 44  44  288 52  280 50  280 56  280 56  280 56  280 56  280 56  393 393  335 593  335 593  335 593  337 107.2  391 55.0	MIN		317	41	00 00		8 6	5 620		620	620 222	620 222	620 222 0.20 663 276 0.30	620 222 0.20 663 276 0.30	620 222 0.20 663 276 0.30	620 222 0.20 26 663 276 0.20 30	620 222 0.20 26 663 276 0.20 30	620 222 0.20 26 8.30 667 276 0.30 30 8.77
307 39 325 41 326 44 326 44 328 48 327 44 47 301 539 47.0 339 47.0 339 47.0 339 47.0 339 47.0 339 47.0 360 50 10 280 50 10 280 56 10 333 335 59.3 0.0 335 59.3	307 39 325 41 326 45 326 45 328 48 327 41 40 301 539 47.0 393 47.0 393 48 393 393 394.2 393 394.2 393 393 394.2 393 393 394.2 393 393 393 393 393 393 393 393 393 393	2 2 2 307 39 325 41 316 40 326 45 328 48 327 47 301 53 301 53 303 47.0 393 47.0 393 47.0 394 48 288 52 288 52 288 52 280 56 280 56 280 56 280 56 280 56 383 59.3 335 59.3 335 59.3	2 2 2 335 41 316 40 325 41 316 40 327 48 328 48 327 44 301 53 301	MEAN No. of		319	3 4	o oc		• •		641	641 224	641 224	641 224 0.20	641 224 0.20	641 224 0.20	641 224 0.20 28	641 224 0.20 28	641 224 0.20 28 8.51	641 224 0.20 28 8.51 38
307 39 325 41 316 40 326 45 328 48 327 44 301 53 297 44 301 53 297 44 44 288 52 284 48 10 280 50 10 280 56 10 333 58.9	307 39 325 41 316 40 328 48 328 48 327 44 301 53 301 53 301 63 302 44 301 63 303 47.0 329 43.0 329 43.0 329 53 47.0 329 53 47.0 329 53 47.0 360 56 10 280 56 10 280 56 10 280 56 10 280 56 10 383 589 360 373 942 0.0 335 593 0.0 335 593	325 41 316 40 328 48 328 48 327 44 40 292 44 40 301 53 301 63 301 63 302 44 43 279 44 48 280 56 280 56 280 56 280 56 280 56 280 56 280 56 331 331 332 94.2 303 335 59.3 333 59.3	325 41 316 40 326 45 327 48 327 47 292 44 301 53 301 53 302 40 303 47.0 303 47.0 303 47.0 304 48 288 52 280 56 280 56 280 56 280 56 280 56 280 56 280 56 333 593 335 593 335 593 335 593 337 4107.2	Analysis 2000**	7	7	7	2		7	2 2		2	2	2 2 2	2 2 2 2	2 2 2 2	2 2 2 2 2 2	2 2 2 2 2 2 2	2 2 2 2 2 2 2 2.00	2 2 2 2 2 2 2 2.00 2
316 40 326 45 328 48 327 44 328 48 327 44 301 539 43.0 339 47.0 339 47.0 339 47.0 339 47.0 339 47.0 45.0 279 44 45.0 279 44 45.0 279 44 48 28 52 284 48 70 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 333 593 00 335 593 00 335 593	316 40 326 45 328 48 327 44 328 48 327 44 301 539 43.0 339 47.0 339 47.0 339 47.0 339 47.0 340 550 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 333 593 10 0.0 335 593	316 40 326 45 328 48 327 44 301 53 297 49 301 53 297 49 301 53 297 49 303 47.0 393 47.0 393 47.0 394 48 288 55 288 55 280 56 280 56 280 56 280 56 380 53 381 36.0 373 94.2 397 89.3 335 59.3 335 59.3	316 40 326 45 328 48 327 44 301 53 297 44 301 53 297 49 303 43.0 3393 44.0 44 288 52 280 56 280 56 280 56 280 56 381 373 94.2 307 58.9 335 59.3 335 59.3 335 59.3 335 59.3 337 399 back to 1989	MIN		307	39			4 4	4 547		547	547	547	547 218 615 233	547 218 615 233	547 218 615 233	547 218 28 615 23	547 218 28 615 23	547 218 28 8.45 615 23 8.48
326 45 328 48 327 47 292 44 47 301 53 297 44 49 329 47.0 339 47.0 339 47.0 340 45.0 288 52 288 52 288 52 289 56 10 280 56 10 333 593 600 10 335 593 10 00 335 593	326 45 328 48 327 47 292 44 301 533 297 44 301 533 301 633 301 633 301 64 44 48 288 52 288 52 288 52 288 52 288 52 288 52 288 52 288 52 288 52 288 52 288 52 288 52 288 52 289 56 280 56 20 333 307 385 280 00 333 00 333 00 333 No flow 1991 back to 1989	326 45 328 48 48 327 47 301 53 301 63 302 44 49 329 47.0 361 45.0 279 44 48 288 52 288 52 280 56 280 56 280 56 280 56 280 56 280 56 373 94.2 373 94.2 373 94.2 397 59.3 335 59.3 335 59.3 391 back to 1989	326 45 328 48 327 47 292 44 301 53 301 63 303 47.0 303 47.0 303 47.0 304 48 228 55 280 56 280 56 280 56 280 56 280 56 280 56 280 56 380 33 373 94.2 373 991 back to 1989	MEAN		316	. 04			ν.		581	581	581	581 226	581 226	581 226	581 226 31	581 226 31	581 226 31 8.47	581 226 31 8.47 45
328 48 327 44 301 53 297 44 301 53 301 63 301 63 301 63 301 63 301 63 301 63 40 40 40 40 40 40 40 40 40 40 40 40 40	328 48 327 44 301 533 301 633 301 633 301 633 301 633 301 633 44 49 47.0 44 288 52 288 52 288 52 288 52 289 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 335 593 0.0 335 593	328 48 327 44 301 53 297 44 301 53 297 44 49 328 43.0 393 47.0 391 45.0 280 50 280 56 280 56 280 56 280 56 280 56 381 355 393 335 991 back to 1989	328 48 327 44 301 53 297 44 301 53 297 44 49 303 47.0 393 47.0 361 45.0 288 52 288 52 288 56 280 56 280 56 280 56 280 56 373 373 94.2 373 59.3 335 59.3 335 59.3 335 59.3 335 59.3 337 391 back to 1989	1999**		326	45			4	4 513		231	231	231 0	231 0	231 0	231 0 27	231 0 27	231 0 27	231 0 27 7.83
292 44 301 53 301 53 301 53 301 53 301 53 301 53 47.0 333 47.0 44 288 52 284 48 50 10 280 50 10 280 50 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 333 342 0.0 333 59.3 0.0 335 59.3	292 44 301 53 297 44 301 53 297 49 319 43.0 329 43.0 339 47.0 361 65.0 288 52 284 48 10 280 56 10 280 56 10 280 56 10 280 56 20 373 94.2 0.0 335 59.3 0.0 335 59.3	292 44 301 53 297 44 301 53 297 49 329 47.0 361 45.0 288 52 284 48 280 56 280 56 280 56 280 56 373 94.2 307 58.9 335 59.3 335 59.3	292 44 301 53 301 63 302 44 301 53 303 47.0 361 45.0 288 52 280 56 280 56 280 56 280 56 280 56 313 94.2 307 88.9 313 59.3 313 59.3 315 59.3 315 59.3 317 22 318 55.0	MAX		328	8 1			• •		583	583	583 240	583 240 0	583 240 0	583 240 0	583 240 0 31	583 240 0 31	583 240 0 31 8.45	583 240 0 31 8.45 40
292 44 301 53 297 44 302 44 3129 43.0 329 43.0 339 47.0 361 45.0 279 44 288 52 284 48 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 333 593 0.0 333 593	292 44 301 53 301 63 301 63 301 63 301 63 301 63 301 63 302 63 303 47.0 303 304 300 300 300 335 59.3 No flow 1991 back to 1989	292 44 301 53 301 63 302 44 49 329 43.0 361 45.0 279 44 288 52 284 48 280 56 280 56 280 56 280 56 280 56 380 56 380 56 380 56 380 56 380 56 380 56 380 56 380 56 381 382 593 335 593 335 593	292 44 301 53 301 63 301 73 301 83 302 44 49 303 47.0 279 44 48 288 52 280 56 280 56 280 56 280 56 373 99.2 373 99.2 373 99.3 335 59.3 335 59.3 335 59.3 335 29.3 335 29.3 337 397 107.2 311 55.0	MEAN		327	47			S	5 548		548 236	548 236	548 236	548 236 0	548 236 0	548 236 0	548 236 0 29	548 236 0 29 8.14	548 236 0 29 8.14 36
301 53 297 49 329 43.0 393 47.0 361 45.0 279 44 288 52 284 48 10 280 56 10 280 56 10 280 56 10 280 56 0.0 241 36.0 2.0 373 94.2 0.0 335 59.3 0.0 335 59.3	301 53 297 49 329 43.0 393 47.0 361 45.0 288 52 284 48 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 380 56 10 380 593 0.0 335 59.3 No flow 1991 back to 1989	301 53 329 43.0 393 47.0 361 45.0 279 44 288 52 280 56 280 56 280 56 280 56 280 56 280 56 280 56 373 94.2 373 94.2 373 59.3 395 back to 1989	301 53 297 49 329 43.0 393 47.0 393 47.0 279 44 288 52 280 56 280 56 280 56 280 56 373 94.2 373 94.2 373 59.3 335 59.3 335 59.3 335 59.3 335 59.3 335 59.3 337 107.2 311 55.0	WIN		292	4	17		7			553	553	553	553 227 1	553 227 1	553 227 1	553 227 1 23	553 227 1 23 8.03	553 227 1 23 8.03 25
297 499 329 43.0 393 47.0 361 45.0 279 44 288 52 284 48 10 280 56 10 280 56 10 280 56 10 280 333 0.0 241 36.0 2.0 373 94.2 0.0 335 59.3 0.0 335 59.3	297 499 329 43.0 393 47.0 361 45.0 279 44 288 52 284 48 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 380 593 No samples taken in 1994 - No flow.	277 49 329 43.0 393 47.0 393 47.0 279 44 288 52 280 56 280 56 280 56 280 56 280 56 280 56 373 94.2 373 94.2 373 59.3 335 59.3 335 59.3	277 49. 329 43.0 393 47.0 393 47.0 393 47.0 288 52 288 52 280 56 280 56 280 56 373 94.2 373 94.2 373 59.3 335 59.3 335 59.3 335 59.3 335 59.3 337 107.2 341 2.2 341 2.2 341 55.0	MAX		301 207	53	6 9		<b>00</b> 0	8 604	604 \$70	604 \$70	604 \$70	604 238 1	604 238 1	604 238 1	604 238 1 31	604 238 1 31	604 238 1 31	604 238 1 31 8.21
329 43.0 383 47.0 361 45.0 279 44 288 52 284 48 10 280 50 10 280 56 10 280 56 10 280 56 10 280 56 20 373 94.2 0.0 335 59.3 0.0 335 59.3	329 43.0 393 47.0 361 45.0 279 44 288 52 284 48 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 280 56 10 380 593 No samples taken in 1994 - No flow.	329 43.0 393 44.0 361 45.0 228 52 284 48 280 56 280 56 280 56 280 56 280 56 280 56 280 56 373 94.2 373 94.2 373 59.3 335 59.3	329 43.0 393 47.0 361 45.0 279 44 288 52 280 56 280 56 280 56 373 94.2 373 59.3 335 59.3 335 59.3 335 59.3 335 59.3 335 59.3 337 397 107.2 371 35.0	MEAN 1997**		167	44	81		×		6/5	6/5	6/5	579 233 1	579 233 1	579 233 1	579 233 1	579 233 1 27	579 233 1 27 8.12	579 233 1 27 8.12 33
333 47.0 361 45.0 279 44 288 52 284 48 10 280 56 10 333 58.9 10 335 59.3 10 335 59.3	333 47.0 361 45.0 279 44 288 52 284 48 10 280 56 10 333 59.3 10 335 59.3 10 335 59.3 10 335 59.3	393 47.0 279 44 288 52 284 48 280 50 280 56 280 56 280 56 280 33 373 94.2 373 94.2 373 94.2 373 59.3 335 59.3	393 47.0 279 44 288 52 288 52 280 56 280 56 280 56 373 94.2 373 94.2 373 59.3 335 59.3 335 59.3 335 59.3 335 59.3 337 397 107.2 37 37 37	MIN		329	43.0	16.0		6.0		533	533	533	533 216	533 216	533 216	533 216 24,00	533 216 24,00	533 216 24.00 8.48	533 216 24.00 8.48 26.0
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279 44 288 52 284 48 10 280 50 10 280 56 10 280 56 20 280 56 20 373 942 0.0 373 942 0.0 335 593 0.0 335 593	279 44 288 52 284 48 10 280 50 10 280 56 10 280 56  No samples taken in 1994 - No flow.  0.0 241 36.0 2.0 373 94.2 0.3 335 59.3 0.0 335 59.3 No flow 1991 back to 1989	279 44 288 52 280 50 280 56 280 56 280 53 373 94.2 373 94.2 373 94.2 373 59.3 335 59.3	279 44 288 52 280 56 280 56 280 56 280 33 373 94.2 377 94.2 377 58.9 335 59.3 335 59.3 335 59.3 335 59.3 335 59.3 337 107.2 371 55.0	MEAIN		100	4.C.4	10.0		10.5		090	090	090	257	257	257	250 25. 21.00	250 25. 21.00	350 23.00 8.30	55.5 8.50 8.50 35.5
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10 280 50 10 280 56 10 280 56 No samples taken in 1994 - No flow. 0.0 373 94.2 0.0 335 59.3 0.0 335 59.3	10 280 50 10 280 56 10 280 56 No samples taken in 1994 - No flow. 0.0 241 36.0 0.3 373 94.2 0.3 373 94.2 0.3 373 58.9 0.0 335 59.3 0.0 335 59.3 No flow 1991 back to 1989	280 50 280 56 280 56 280 53 33 34.2 36.0 373 94.2 307 58.9 335 59.3 335 59.3 391 back to 1989	280 56 280 56 280 56 280 56 36 241 36.0 373 94.2 307 58.9 335 59.3 335 59.3 335 59.3 335 59.3 337 107.2 37 37 37	1995		107	ř	2		0		790	407	407	0 457	0 457	0 457	50 0 407 100	50 0 407 100	1 66.0	75 1 65.50
10 280 50 15 No samples taken in 1994 - No flow.  0.0 241 36.0 0.0 2.0 373 94.2 9.0 0.3 307 58.9 1.0 0.0 335 59.3 0.0 0.0 335 59.3 0.0	10 280 50 15 No samples taken in 1994 - No flow.  0.0 241 36.0 0.0 2.0 373 94.2 9.0 0.3 375 58.9 1.0 0.0 335 59.3 0.0 0.0 335 59.3 0.0 No flow 1991 back to 1989	280 53 280 53 241 36.0 373 94.2 307 58.9 335 59.3 335 59.3	280 50 15 280 50 15 281 826.0 241 36.0 373 94.2 977 58.9 1.0 335 59.3 0.0 335 59.3 0.0 991 back to 1989 241 2.2 241 2.2 241 2.2 37 37 37 33	MIN	2 2	280	20	51		9 6		503	503 240	503 240 0	503 240 0 0	503 240 0 0 25	503 240 0 0 25 0	503 240 0 0 25 0 5	503 240 0 0 25 0 5	503 240 0 0 25 0 5 7.44 1	503 240 0 0 25 0 5 7.44 1 27
No samples taken in 1994 - No flow.  0.0 241 36.0 0.0 2.0 373 94.2 9.0 0.3 307 58.9 1.0 0.0 335 59.3 0.0 0.0 335 59.3 0.0	No samples taken in 1994 - No flow.  0.0 241 36.0 0.0 2.0 373 94.2 9.0 0.3 335 58.9 1.0 0.0 335 59.3 0.0 0.0 335 59.3 0.0 No flow 1991 back to 1989	241 36.0 373 94.2 307 58.9 335 59.3 335 59.3 335 59.3	241 36.0 0.0 373 94.2 9.0 375 58.9 1.0 335 59.3 0.0 335 59.3 0.0 991 back to 1989 241 22 0.1 241 25.0 37 37 37 37 30	MEAN	2 0	280	53	c SI		<b>8</b>	8 530 7 517		530 517	530 269 517 255	530 269 0 517 255 0	550 269 0 0 517 255 0 0	550 269 0 0 35 517 255 0 0 30	530 269 0 0 35 0 517 255 0 0 30 0	550 269 0 0 35 0 5 517 255 0 0 30 0 5	550 269 0 0 35 0 5 517 255 0 0 30 0 5	550 269 U U 55 U 5 8:81 I 517 255 U 0 30 U 5 8:13 I
No samples taken in 1994 - No flow.  0.0 241 360 0.0 2.0 373 94.2 9.0 0.3 307 \$8.9 1.0 0.0 335 \$9.3 0.0 0.0 335 \$9.3 0.0	No samples taken in 1994 - No flow.  0.0 241 36.0 0.0 2.0 373 94.2 9.0 0.3 307 58.9 1.0 0.0 335 59.3 0.0 0.0 335 59.3 0.0 0.0 335 59.3 0.0	241 36.0 373 94.2 307 58.9 335 59.3 335 59.3 991 back to 1989	241 36.0 0.0 373 94.2 9.0 373 58.9 1.0 335 59.3 0.0 335 59.3 0.0 335 59.3 0.0 335 19.3 0.0 331 55.0 59.3 3.0 331 55.0 59.3 3.0	1994			ı	1													
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0.0 241 360 0.0 2.0 373 94.2 9.0 0.3 307 58.9 1.0 0.0 335 59.3 0.0 0.0 335 59.3 0.0	0.0 241 360 0.0 2.0 373 94.2 9.0 0.3 307 58.9 1.0 0.0 335 59.3 0.0 0.0 335 59.3 0.0 No flow 1991 back to 1989	241 36.0 373 94.2 307 58.9 335 59.3 335 59.3 991 back to 1989	241 36.0 0.0 373 94.2 9.0 377 58.9 1.0 335 59.3 0.0 335 59.3 0.0 991 back to 1989 241 2.2 0.1 241 2.2 0.1 397 107.2 19.0 311 55.0 5.5	1993	;	;									19	197	100	199			
2.0 573 542 5.0 0.3 307 58.9 1.0 0.0 335 59.3 0.0 0.0 335 59.3 0.0	2.0 573 594.2 570 0.3 307 58.9 1.0 0.0 335 59.3 0.0 0.0 335 59.3 0.0 No flow 1991 back to 1989	315 94.2 307 58.9 335 59.3 335 59.3 991 back to 1989	315 34.2 5.0 315 38.9 1.0 315 39.3 0.0 315 59.3 0.0 991 back to 1989 241 2.2 0.1 397 107.2 19.0 311 55.0 5.5	MIN	0.0	241	36.0	0.0		5.6		484	484 193	484 193 0.05	484 193 0.05 0.07	484 193 0.05 0.07 19.30	484 193 0.05 0.07 19.30 0.03	484 193 0.05 0.07 19.30 0.03 0.0	484 193 0.05 0.07 19.30 0.03 0.0 8.26	484 193 0.05 0.07 19.30 0.03 0.0 8.26	484 193 0.05 0.07 19.30 0.03 0.0 8.26 0.94 20.00
0.0 335 59.3 0.0 0.0 335 59.3 0.0 0.0 335 59.3 0.0	0.0 335 59.3 0.0 0.0 335 59.3 0.0 0.0 0.0 335 59.3 0.0 No flow 1991 back to 1989	335 59.3 335 59.3 335 59.3 991 back to 1989	335 593 0.0 335 593 0.0 335 59.3 0.0 991 back to 1989  241 2.2 0.1 397 107.2 19.0 311 55.0 5.5	MAX	2.0	373 307	94.2 58.9	0.6		9.0	9.0 580 7.6 528		580	580 343 528 263	580 343 0.35 528 263 0.18	580 343 0.35 8.10 528 263 0.18 1.52	580 343 0.35 8.10 37.00 528 263 0.18 1.52 28.28	580 343 0.35 8.10 37.00 0.20 528 263 0.18 152 28.28 0.08	580 343 0.35 8.10 37.00 0.20 1.3 528 263 0.18 152 28.28 0.08 0.3	580 343 0.35 8.10 37.00 0.20 1.3 8.73 2.20 528 263 0.18 152 28.28 0.08 0.3 8.61 159	580 343 0.35 8.10 37.00 0.20 1.3 8.73 2.20 528 263 0.18 152 28.28 0.08 0.3 8.61 159
0.0 335 59.3 0.0 0.0 335 59.3 0.0	0.0 535 59.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	335 59.3 335 59.3 335 59.3 991 back to 1989	335 59.3 0.0 335 59.3 0.0 335 59.3 0.0 991 back to 1989  241 2.2 0.1 397 107.2 19.0 311 55.0 5.5	1992	} ;				•	2 5				201	70.1				10:0	(0) 100 000 000 000 000 000 000 000 000 0	07:00 (01:10:00 (00:00 07
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	No flow 1991 back to 1989	991 back to 1989	991 back to 1989  241 2.2 0.1 397 107.2 19.0 311 55.0 5.5	MEAN	0.0	335	59.3	0.0		20.0		540 540	540 540	540 267	540 267 0.00 540 267 0.00	540 267 0.00 0.00 540 267 0.00 0.00	540 267 0.00 0.00 29.00 540 267 0.00 0.00 29.00	540 267 0.00 0.00 29.00 0.10 540 267 0.00 0.00 29.00 0.10	340 267 0.00 0.00 29.00 0.10 1.2 8.80 540 267 0.00 0.00 29.00 0.10 1.2 8.80	340 267 0.00 0.00 29.00 0.10 1.2 8.80 540 267 0.00 0.00 29.00 0.10 1.2 8.80	540 267 0,00 0,00 25,00 0,10 1.2 8.80 0,00 540 267 0,00 0,00 29.00 0,10 1.2 8.80 0,00
		MIN No flow 1991 back to 1989 MAX FEAN	991 back to 1989  241 2.2 0.1  397 107.2 19.0  311 55.0 5.5	166	:	;	:	í		1		2						411	0000 411 0100 00004 0000 0000	000 000 711 010 0007	CC-1841 00:0 00:0 7:1 01:0 00:0 00:0 00:0
741	241 33	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	11.3 311 55.0 27 37 37	MAX	137.0	397	107.2	19.0		176.0	176.0 1580		, 1580 599	1580 599	1580 599 40.10	1580 599 40.10 0.35	300 153 0.01 15.30 1 1580 599 40.10 0.35 83.90	300 193 0.01 19.30 0.01 1580 599 40.10 0.35 83.90 0.24	, 1580 599 40.10 0.35 83.90 0.24 5.0	300 153 0,01 0,01 15,50 0,01 0,1 0,57 0,01 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	300 153 0.01 0.01 15.50 0.01 0.1 0.57 0.01 15.40 1.1 15.40 1.1 15.40 1.1 15.40 1.1 15.40 1.1 15.40 1.1 15.40 1.1 15.40 1.1 15.40 1.1 15.40 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.
.AL 1978-2000 0.1 241 2.2 137.0 397 107.2	241 2.2 397 107.2	137.0 397 107.2	27 37 37	MEAN No. of	11.3	311	55.0	5.5		19.0		593	593 284	593 284 0.83	593 284 0.83 0.09	593 284 0.83 0.09 34.98	593 284 0.83 0.09 34.98 0.04	593 284 0.83 0.09 34.98 0.04 1.2	593 284 0.83 0.09 34.98 0.04 1.2 8.00	593 284 0.83 0.09 34.98 0.04 1.2 8.00 1.26	593 284 0.83 0.09 34.98 0.04 1.2 8.00 1.26 32.76
241 2.2 0.1 397 107.2 19.0 311 55.0 5.5	241 2.2 0.1 397 107.2 19.0 311 55.0 5.5	137.0 397 107.2 11.3 311 55.0		Analysis	27	37	37	30		38	38 77		77	77 37	77 37 71 20	77 37 71 20 37	77 37 71	77 37 71 20 37 66	77 37 71 20 37 66 25	77 37 71 20 37 66 25 78	77 37 71 20 37 66 25 78 29

Quality parameters are reported as mg/l unless otherwise noted.
 Data: Database input restricted to values greater then laboratory minimum detection limit.

## TABLE 15: DEER CREEK SURFACE WATER QUALITY \*

## DCR06 - BELOW THE MINE

15   15   15   15   15   15   15   15	DATES ACIDITY	TY BICARBONATE	CALCIUM	CARBONATE	CHLORIDE	(nmpoz/cm)	HAKONESS	TOTAL	DISSOLVED	MACALSIUM	MANGANESE	CKEASE	PH (units)	POTASSIUM	SOUTON	SULFAILE	3	í
19   19   19   19   19   19   19   19	2010314	304	19		198	1534	358			1			l	5		136		764
237	0010629	301	47		98	904	261			35			8.40	7	89	11		465
137 68 1 17 1154 136 010 15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3010913	298	20		39	111	302			43			8.65	٠,	36	110	9	452
131	2011211	327	89		177	1364	396	0.10		55			8.44	8	137	136	6	179
1979   47   77   78   9   9   9   9   9   9   9   9   9	2001**																	
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	MIN	298	47		39	111	261	01.0		35			8.40	7	36	11	9	452
196         55         4         101         105         350         40         44         4 <t< td=""><td>MAX</td><td>327</td><td>89</td><td></td><td>171</td><td>1364</td><td>396</td><td>0.10</td><td></td><td>55</td><td></td><td></td><td>8.65</td><td>2</td><td>137</td><td>136</td><td>6</td><td>77</td></t<>	MAX	327	89		171	1364	396	0.10		55			8.65	2	137	136	6	77
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,		309	55		101	1015	320	0.10		4			8.50	4	80	108	∞	565
13.5   5.6		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	7	4
13	- 0007	700	ī		9	958	000	¢		;			ď	,	Ş	8		3
13   50   6   61   10   11   1   10   11   1   1   1	MIN	737	5 3		3 6	858	309	o -		<b>4</b> 2			» o	<b>^</b> \	2 5	£ 5	n (	44
237	MAA	332	6 3	,	. 67	24.5	200	- ‹		2 4			•	۰.	<u>ک</u> د	101	2 8	ה ה ה
357         58         7         58         92         44         64<	MEAN	CIC	90	٥	80	600	140	>		44			•	n	ç	971	9	277
134   14   7   5   5   6   6   6   7   7   7   7   7   7   7	MIN	297	85	7	48	827	330	c		44			œ	4	40	126	v	497
11   12   12   13   15   15   15   15   15   15   15	MAX	354	27	. ~	. %	650	440	· -		: 8				+ 4	? <b>;</b>	177	. 5	7 7
278         64         38         66         92         125         010         400         5600         93         5600         93         56         17         86         17         86         17         18           356         14         38         162         164         136         136         5600         5600         9         7         86         17         18         17         18	MEAN	331	. 2	7	22	866	367			; S			\ <b>o</b> c	, v	47	143	1 7	533
258         64         38         66         92         10         400         400         9         50         12         11         61         415         610         460         460         9         7         7         8         15         16         84         17         84         17         84         17         84         17         84         18         1	**8661							•		:			•		:	!	i	
356         74         38         102         1061         415         139         560         9         7         89         7         89         163         89           256         46         10         83         86         23         0.39         466         9         7         89         7         89         161         89           256         10         1112         4896         239         0.20         460         9         6         7         89         161         161         89         161         181         181         181         181         9         6         7         9         6         7         181         181         181         181         0         44         2         9         6         7         181         181         181         0         44         44         9         4         19         19         18	MIN	278	2	38	99	952	325	010		40 00			•		95	127	=	582
350   67   84   68   69   69   69   69   69   68   68	MAX	365	74	38	102	1061	415	1.90		26.00			6	7	68	163	84	640
244 56 23 111 2 182	MEAN	320	19	38	85	1001	369	06.0		48.67			<b>∞</b>	\$	72	147	58	618
255         46         10         813         886         243         0.20         4100         9         1         62         15         6         5         6         6         10         813         886         249         0.20         4733         9         1         62         15         16         17         473         9         1         62         15         16         17         473         9         1         62         15         18 <t< td=""><td>***166</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	***166																	
320         103         10         1112         4590         529         0.20         66.00         9         6         738         132         32           244         56         23         112         1022         313         0         42         9         6         738         132         32           244         56         23         112         1022         313         0         42         9         2         9         6         73         19         11         19	MIN	295	46	01	83	806	243	0.20		31.00			6	-	62	65	9	8
305   68   10   467   2239   366   0.20   4733   9   9   3   3   320   108   18     244   56   23   112   1022   313   0   42   9   9   9   9   9   13     244   56   23   112   1022   313   0   42   9   9   9   9   9   9   13     245   56   23   112   1022   313   0   42   9   9   2   9   9   9   9   13     250   66   20   211   936   330   0   0   0   41   0   5   8   9   2   9   9   9   9   13     251   66   20   211   936   330   0   0   0   41   0   5   8   9   3   199   120   30     252   66   23   279   1130   365   0   0   0   0   41   0   0   5   8   9   3   199   120   30     253   66   23   279   1130   365   0   0   0   0   0   41   0   0   5   8   9   3   199   120   30     254   352   66   23   1130   365   0   0   0   0   0   0   0   5   8   9   3   199   120   30     254   352   66   23   1130   365   0   0   0   0   0   0   0   5   8   8   3   199   120   30     254   353   90   3054   324   324   324   324   324   324   324   324   324   324     254   451   0   0   250   250   250   250   251   251   251   251   251   251   251     255   153   350   250   250   250   251   251   251   251   251   251   251     256   153   60   250   250   250   251   251   251   251   251   251   251     257   257   257   257   257   257   257   257   257   257   257   257   257   257   257   257     256   151   250   250   250   250   250   250   250   250   250     257   257   257   257   257   257   257   257   257   257   257     258   251   251   251   251   251   251   251   251   251     258   251   251   251   251   251   251   251   251     259   251   251   251   251   251   251   251   251   251     250   251   251   251   251   251   251   251   251     250   251   251   251   251   251   251   251   251   251     250   251   251   251   251   251   251   251   251   251   251   251     250	MAX	320	103	10	1112	4590	529	0.20		00:99			6	9	758	132	32	2460
244         56         23         132         1022         313         0         42         9         2         99         84         13           244         56         23         132         1022         313         0         42         9         2         99         84         13           244         56         23         112         1022         313         0         42         9         2         99         84         13           255         66         25         29         111         956         39         8         2         9         2         99         84         13           255         66         25         119         1170         96         0         41         0         5         8         3         199         120         9         8         1         199         19         9         3         19         9         18         19         9         19         9         3         8         19         19         19         9         18         11         19         9         19         19         9         2         9         8         19	MEAN	305	89	01	467	2239	366	0.20		47.33			6	3	320	108	<u>8</u>	1243
244         56         25         11         10         10         23         13         0         42         9         2         9         2         99         84         13           244         56         23         132         1022         313         0         42         9         2         9         2         9         84         13           250         66         25         11         26         40         0         9         42         9         2         99         84         13           253         66         25         279         110         9         2         9         2         99         84         13           253         66         25         110         36         0         0         49         9         2         99         84         13           253         66         25         110         0         0         49         9         2         99         84         13           214         384         6         2         10         0         49         0         5         8         3         19         18         11	**966		ì	8			;	,		,				,	6	į	;	
250 66 22 111 936 310 0 0 0 41 0 5 8 8 2 7 9 84 13 255 66 22 279 1270 400 0 0 0 41 0 0 5 8 8 1 199 120 30 255 66 22 279 1270 400 0 0 0 49 0 5 7 9 9 84 13 255 66 22 279 1270 400 0 0 0 5 7 0 5 8 8 1 199 120 30 257 66 22 279 1270 400 0 0 0 5 7 0 5 8 8 1 199 120 30 258 66 25 279 1270 400 0 0 0 5 7 9 9 84 13 259 66 25 279 1270 400 0 0 0 775 20 3400 900 110 259 75 75 75 75 75 75 75 75 18 259 75 75 75 75 75 18 259 75 75 75 75 75 18 259 75 75 75 75 18 259 75 75 75 75 75 18 259 75 75 75 75 75 18 259 75 75 75 75 75 19 250 75 75 75 75 75 75 75 75 75 75 75 75 75	MIN	244	90 39	5 23	132	7701	515	<b>-</b>		2 4			ۍ د	7 (	<b>3</b> . 8	× 5	2 2	765
255 666 25 111 936 330 0 0 0 49 0 5 8 8 1 199 120 30 18	6FAN	44.	8 %	3 %	132	1022	313	<b>,</b>		7 C			. 0	4 c	8	ŧ 2	2 2	507
256 66 25 111 956 330 0 0 41 0 5 8 8 2 779 57 5 8 2 279 1270 400 0 0 4 41 0 0 5 8 8 1 2 79 120 5 8 1 2 239 120 120 120 120 120 120 120 120 120 120	1995									!				ı	:	i	:	
255 66 25 279 1270 400 0 0 0 57 9 9 3 199 120 30 180 180 180 180 180 180 180 180 180 18		250	99	20	Ξ	936	330	0	0	41	0	\$	œ	2	79	70	2	490
233 666 23 195 1103 365 0 0 49 0 0 5 5 8 3 1199 95 18  tes taken in 1994 - No flow.  224 382 00 354 724 260 004 006 3400 000 775 220 3400 900 10  315 683 25 85 85 961 375 014 046 4961 004 10 878 11030 13800 1900  316 1298 60 600 1340 703 023 034 629 009 17 856 609 970  317 682 1298 60 600 1340 703 023 034 629 009 17 856 609 970  318 842 10 990 890 2278 000 000 2714 000 07 78 856 609 970  319 842 16 413 090 890 17000 127 4768 000 127 14 01 01 692 170 2308  310 274 818 1030 13800 100 200 100 100 100 100 10 10 10 10 10 10 10		255	99	25	279	1270	400	0	0	2.1	0	2	6	3	166	120	30	8
274         382         0.0         35.4         724         260         0.04         0.06         34.00         0.00         775         220         34.00         90.0         1.0           274         382         0.0         205.0         11360         483         0.0         2.70         65.00         0.0         0.0         775         2.20         34.00         90.0         1.0           431         953         9.0         205.0         11360         483         0.0         2.70         65.00         0.10         5.0         881         103.0         138.00         100         0.0         10         5.0         881         103.0         100         0.0         0.0         0.0         10         10         8.0         88.9         10         0.0         0.0         0.0         17         8.4         4.9         4.9         16.8         30.7         30.7         30.7         9.0         0.0         0.0         0.0         17         8.9         9.2         16.8         30.7         30.0         20.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0		253	99	23	195	1103	365	0	0	49	0	S	00	3	139	95	<u>*</u>	69
274         382         0.0         354         724         260         0.04         0.06         34,00         0.00         0.775         2.20         34,00         900         1.0           431         95.3         9.0         205.0         136         483         0.30         2.70         65.00         0.00         0.0         7.75         2.20         34,00         90.0         1.0           431         95.3         9.0         205.0         136         483         0.30         2.70         65.00         0.01         5.0         8.81         10.30         1900         200           315         68.3         2.5         85.8         961         375         0.14         0.46         49.61         0.04         1.0         8.43         4.94         68.91         16.18         30.7           356         122.8         6.0         6.0         0.01         0.1         41.20         0.01         0.1         8.43         4.94         68.91         16.18         30.7           256         82.1         0.9         9.0         1.3         0.04         0.08         5.41         0.02         0.74         5.23         281.9         78.0	1994																	
274         38.2         0.0         35.4         724         266         0.04         0.06         63.400         0.00         0.0         775         2.20         34.00         900         1.0           431         95.3         90         205.0         136         483         10.30         138.00         190.0         1.0           431         95.3         90         205.0         136         483         10.30         138.00         190.0         1.0           162         46.1         0.1         206         60.0         134         0.4         49.61         0.04         1.0         8.43         4.94         49.4         190.0         1.0           356         129.8         6.0         600         1340         703         0.23         0.57         91.90         0.0         1.7         8.44         4.94<		oles taken in 1994 - No	flow.															
274         38.2         0.0         35.4         724         260         0.04         0.06         34.00         0.0         7.75         220         34.00         90.0         1.0           431         95.3         9.0         205.0         1360         483         0.30         2.70         65.00         0.10         5.0         881         10.30         138.00         190.0         200.0           315         68.3         2.5         85.8         961         375         0.14         0.46         49.61         0.04         1.0         84.3         4.94         68.91         161.8         30.7           162         46.1         0.1         20         63.2         313         0.01         0.01         0.04         1.0         84.3         4.94         68.91         161.8         30.7           162         46.1         0.1         20.0         692         313         0.01         0.01         41.20         0.01         0.04         1.7         8.94         9.23         77.76         600.0         9.00           356         182.1         60         60.0         134         0.04         0.08         1.74         0.02         2.23 </td <td>MAX</td> <td></td>	MAX																	
274         38.2         0.0         35.4         774         260         0.04         0.06         34.00         0.0         775         2.20         34.00         90.0         1.0           431         95.3         9.0         205.0         1360         483         0.30         2.70         65.00         0.10         5.0         8.81         10.30         138.00         190.0         200.0           315         68.3         2.5         85.8         96.1         375         0.14         0.46         4961         0.04         1.0         8.43         4.94         68.91         161.8         30.7           162         46.1         0.1         200         60.0         1340         703         0.23         0.7         9.90         0.09         1.7         8.94         9.23         77.76         60.0         9.00           256         6.0         6.0         1340         703         0.23         0.57         91.90         0.09         1.7         8.94         9.23         77.76         60.00         9.0           258         1051         6.0         9.0         2.20         0.09         1.7         8.56         6.0         9.0	MEAN																	
214         58.2         9.0         25.4         7.4         2.0         63.0         0.0<		77.4	000	Ġ	7 30	Ę	0,0	3	ò	8	0	ć		6	00,0	6		;
41         25.5         2		431	20.7	0.0	33.4	1350	783	40.0	0.00	34.00	000	0.0	C/./	2.20	34.00	20.05	0.0	4 6
162         461         01         200         692         313         001         001         4120         001         78         253         28.19         78.0         3.0           356         129.8         6.0         6.0         1340         703         0.23         0.57         91.90         0.09         1.7         8.94         92.3         77.76         600.0         97.0           256         82.1         0.0         1340         703         0.23         0.57         91.90         0.09         1.7         8.94         92.3         77.76         600.0         97.0           258         53.5         0.0         270         0.04         0.08         57.14         0.00         7.0         7.0         2.6.3         3.7         8.50         7.36         2.19         2.6.3           456         105.1         6.0         90.0         890         503         0.25         0.34         62.50         0.05         3.7         8.50         7.36         170         2.0           316         84.2         1.6         4.35         1.0         0.0         0.0         27.14         0.00         0.0         2.14         0.0 <td< td=""><td></td><td>315</td><td>683</td><td>5. 5.</td><td>85.8</td><td>196</td><td>375</td><td>0.30</td><td>0.46</td><td>49.61</td><td>0.10</td><td>0.0</td><td>8.43</td><td>4 94</td><td>68.91</td><td>161.8</td><td>30.7</td><td>9 6</td></td<>		315	683	5. 5.	85.8	196	375	0.30	0.46	49.61	0.10	0.0	8.43	4 94	68.91	161.8	30.7	9 6
162         461         0.1         200         692         313         0.01         0.01         41.20         0.01         0.1         780         2.53         28.19         78.0         3.0           346         129.8         6.0         60.0         1340         703         0.23         0.57         91.90         0.09         1.7         8.94         9.23         77.76         600.0         97.0           296         82.1         0.9         23.0         6.0         6.0         6.0         9.00         9.0         9.44         0.0         0.0         7.40         2.29         28.13         80.0         26.3           456         105.1         6.0         90.0         890         5.03         0.25         0.34         6.25         0.05         3.7         8.50         7.36         170.0         2.0           316         84.2         1.6         43.5         6.0         0.0         0.0         27.14         0.00         0.0         27.14         0.00         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.0         2.		:		ì	1		<b>.</b>		2			2	2	}			è	5
356         129.8         6.0         60.0         1340         703         0.23         0.57         91.90         0.09         1.7         8.94         9.23         77.76         600.0         97.0           296         82.1         0.9         39.6         889         429         0.04         0.08         54.41         0.02         0.7         8.56         6.09         50.08         219.0         26.3           268         53.5         0.0         25.0         520         278         0.00         0.00         27.14         0.00         0.07         74.0         2.29         28.13         80.0         2.0           456         105.1         6.0         90.0         890         503         0.25         0.34         62.50         0.05         3.7         8.50         73.6         714.0         230.0         59.0           316         84.2         1.6         43.5         696         407         0.06         0.12         47.68         0.01         474         43.52         170.0         23.8           162         2.4         0.1         0.01         0.01         1.24.00         0.07         1.24.00         1.24.00         1.24.00			46.1	1.0	20.0	692	313	0.01	10.0	41.20	10.0	0.1	7.80	2.53	28.19	78.0	3.0	4
296         82.1         0.9         396         889         429         0.04         0.08         5441         0.02         0.7         8.56         6.09         50.08         219.0         26.3           268         53.5         0.0         520         278         0.00         0.00         27.14         0.00         0.0         7.40         2.29         28.13         80.0         2.0           456         105.1         60         90.0         890         503         0.25         0.34         62.50         0.05         3.7         8.50         7.36         71.40         230.0         59.0           316         84.2         1.6         43.5         696         407         0.06         0.12         47.68         0.02         1.5         8.20         4.74         43.52         170.0         23.8           162         2.4         0.1         50         47.7         8.0         4.74         43.52         170.0         23.8           456         191.9         38.0         1112.0         4590         990         170.00         1.22         124.00         0.04         1.5         82.0         4.77         81.30         187.2         21			129.8	0.9	0.09	1340	703	0.23	0.57	91.90	60.0	1.7	8.94	9.23	77.76	0.009	0.76	<u>8</u>
268         53.5         0.0         25.0         278         0.00         0.00         2714         0.00         0.0         74.0         2.29         28.13         80.0         2.0           456         105.1         6.0         90.0         890         50.3         0.25         0.34         62.50         0.05         3.7         8.50         73.6         71.40         230.0         59.0           316         84.2         1.6         43.5         696         407         0.06         0.12         47.68         0.02         1.5         8.20         4.74         43.52         170.0         23.8           162         2.4         0.1         5.0         407         0.06         0.12         47.68         0.02         1.5         8.20         4.74         43.52         170.0         23.8           162         2.4         0.1         0.01         27.14         0.01         0.01         0.01         0.02         1.5         8.94         10.30         758.00         610.0         20540.00           316         80.7         3.6         96.6         10.24         432         1.90         0.12         54.50         0.04         1.5 <t< td=""><td></td><td>296</td><td>82.1</td><td>6.0</td><td>39.6</td><td>688</td><td>429</td><td>0.04</td><td>80.0</td><td>54.41</td><td>0.02</td><td>0.7</td><td>8.56</td><td>60'9</td><td>80.08</td><td>219.0</td><td>26.3</td><td>28</td></t<>		296	82.1	6.0	39.6	688	429	0.04	80.0	54.41	0.02	0.7	8.56	60'9	80.08	219.0	26.3	28
268         53.5         0.0         25.0         27.8         0.00         0.00         27.14         0.00         740         2.29         28.13         80.0         2.0           456         105.1         6.0         90.0         890         27.8         0.04         0.05         3.7         8.50         7.36         71.40         230         20           316         84.2         1.6         43.5         696         407         0.06         0.12         47.68         0.02         1.5         820         474         43.52         170.0         23.8           162         2.4         0.1         5.0         47.68         0.02         1.5         820         474         43.52         170.0         23.8           456         19.9         470         0.01         0.01         27.14         0.01         692         1.00         28.13         65.0         0.50           456         19.9         450         9.0         170.00         1.12         124.00         0.04         1.5         8.20         4.77         81.30         187.2         217.14			,			;	į	;	;	:	į		:					
450         105.1         6.0         90.0         890         50.3         0.25         0.34         62.50         0.05         3.7         8.50         7.46         7.140         230.0         59.0           316         84.2         1.6         43.5         696         407         0.06         0.12         47.68         0.02         1.5         8.20         4.74         43.52         170.0         23.8           162         2.4         0.1         5.0         47.68         0.0         1.5         8.20         4.74         43.52         170.0         23.8           456         191.9         38.0         1112.0         4590         990         170.00         1.22         124.00         0.27         9.0         8.94         10.30         758.00         610.0         20540.00           316         80.7         3.6         966         11024         432         1.90         0.12         54.50         0.04         1.5         8.20         4.77         81.30         187.2         217.14			53.5	0.0	25.0	270	278	00.0	0.00	27.14	000	0.0	7.40	2.29	28.13	0.08	2.0	304
162 24 0.1 5.0 420 243 0.01 0.01 27.14 0.01 0.1 6.92 1.00 28.13 65.0 0.50 4.74 43.2 170.0 25.8 136 80.7 3.6 96.6 1024 432 1.90 0.12 54.50 0.04 1.5 8.20 4.77 81.30 187.2 217.14			105.1	0.0	90.0	068	203	C7:0	0.34	62.50	0.03	7.5	8.50	95 1	04.17	170.0	0.60	14.
162         24         0.1         5.0         420         243         0.01         0.01         27.14         0.01         0.1         6.92         1.00         28.13         65.0         0.50           456         191.9         38.0         1112.0         4590         990         170.00         1.22         124.00         0.27         9.0         8.94         10.30         738.00         610.0         20540.00           316         80.7         3.6         96.6         1024         432         1.90         0.12         54.50         0.04         1.5         8.20         4.77         81.30         187.2         217.14	TORICAL 1978,200		7.	9.		969	9	90.0	21.0	47.00	70.0	2	07.0	4.74	43.32	1/0.0	6.62	2
90.0 456 191.9 38.0 1112.0 4590 990 170.00 1.22 124.00 0.27 9.0 8.94 10.30 758.00 610.0 20540.00 6.3 316 80.7 3.6 96.6 1024 432 1.90 0.12 54.50 0.04 1.5 8.20 4.77 81.30 187.2 217.14	MIN 0.1		2.4	0.1	5.0	420	243	0.01	0.01	27.14	10.0	0.1	6.92	1 00	28 13		0.50	273
6.3 316 80.7 3.6 96.6 1024 432 1.90 0.12 54.50 0.04 1.5 8.20 4.77 81.30 187.2 217.14			6.161	38.0	1112.0	4590	066	170.00	1 22	124.00	0.27	0.6	8.94	10.30	758.00		0540.00	246(
			80.7	3.6	9.96	1024	432	1.90	0.12	54.50	0.04	1.5	8.20	4.77	81.30		217.14	638
		ì																

Quality parameters are reported as mg/l unless otherwise noted.
 Data: Database input restricted to values greater then laboratory minimum detection limit.

## TABLE 16: MEETINGHOUSE CANYON WATER QUALITY \*

## MHC01 - LEFT FORK

236 34 5 240 40 8 240 40 8 240 40 8 241 34 5 252 2 2 2 2 241 34 5 252 36 5 254 45 10 240 370 130 254 450 207 254 430 100 254 430 100 254 430 100 254 430 100 254 430 100 254 39.5 7.5 219 42 7 220 220 234 45.0 207 240 36.0 5.0 254 39.5 7.5 20 255 65.8 <1.0 0.0 0.0 255 65.8 <1.0 0.0 0.0 255 65.8 <1.0 0.0 0.0 255 65.8 <1.0 0.0 0.0 255 65.8 <1.0 0.0 0.0 255 65.8 <1.0 0.0 0.0 255 65.8 <1.0 0.0 0.0 255 65.8 <1.0 0.0 0.0 255 65.8 <1.0 0.0 0.0 255 65.8 <1.0	256 34 5 240 40 8 240 40 8 240 40 8 241 34 5 252 2 2 2 2 252 37 5 252 37 5 254 45 10 240 350 340 254 450 207 254 450 207 254 39.6 50 254 43.0 100 254 43.0 100 254 43.0 100 254 39.5 7.5 25 25 25 20 26 254 43.0 100 27 256 55 20 28 47 14 20 20 256 65.8 <10 20 00 00 20 255 65.8 <10 20 00 20 195 33.7 00	236 34 5 240 40 8 240 40 8 240 40 8 241 40 8 242 37 7 242 34 5 252 36 52 244 43.0 13.0 244 43.0 13.0 244 43.0 13.0 244 43.0 13.0 244 43.0 10.0 244 43.0 10.0 244 39.5 7.5 219 42 7 240 520 244 43.0 10.0 240 520 240 53 15 250 20 240 53 15 250 20 240 53 20 250 250 65.8 250 00 250 256 65.8 250 00 250 256 65.8 250 00 250 195 33.7 00 250 00 250 195 33.7 00	236 34 5 240 40 8 240 40 8 240 40 8 241 40 8 242 37 7 242 34 5 252 36 52 244 370 130 246 445 10 247 370 130 254 450 207 254 450 207 254 430 100 254 430 100 254 430 100 254 39.5 7.5 219 42 7 220 254 430 10 230 46 10 240 53 52 40 250 256 658 <10 00 256 658 658 00 00 00 195 33.7 000 00 195 33.7 000	236 34 5 240 40 8 240 40 8 240 40 8 241 40 8 242 37 7 242 34 5 252 36 52 244 37.0 13.0 246 445 10 247 37.0 13.0 254 45.0 20.7 254 45.0 20.7 254 45.0 13.0 254 45.0 20.7 254 39.0 10.0 254 39.0 0.0 00 256 65.8 <10 00 00 256 65.8 00 00 00 195 33.7 0.0 00 195 33.7 0.0 00 00 195 33.7 0.0 01 01 02 20 02 01 02 22 03 03.7 0.0 01 01 02 23 06.6 65.8 01 02 03 03.7 0.0 01 01 02 23 06.6 65.8 01 02 03 03.7 0.0 01 02 22 06.6 65.8 01 02 03 03.7 0.0 01 02 22 06.6 65.8 01 02 03 03.7 0.0 01 02 22 06.6 65.8 01 02 22 06.0 01 02 22 06.0 01 02 22 06.0 01 02 22 06.0 01 02 22 06.0 01 02 22 06.0 01 02 22 06.0 01 02 22 06.0 01 02 22 06.0 01 02 22 06.0 01 02 22 06.0 02 03 22 06.0 03 22 06.0 04.0 05 22 06.0 06 07 22 06.0 07 07 07 07 07 07 07 07 07 07 07 07 07 0	236 34 5 240 40 8 240 40 8 241 40 8 241 34 5 262 37 7 262 37 5 262 37 5 263 37 5 27 520 340 240 370 130 240 370 130 240 360 5.0 240 360 5.0 254 43.0 100 254 43.0 100 254 39.5 7.5 219 42 7 220 5.0 234 45.0 207 240 36.0 5.0 254 39.0 0.0 256 65.8 <1.0 256 65.8 <1.0 255 52.4 0.5 195 33.7 0.0 195 33.7 0.0 195 33.7 0.0 252 66.6 <1.0 252 66.6 <1.0 252 66.6 <1.0 252 66.6 <1.0 252 66.6 <1.0 253 66.6 <1.0 252 66.6 <1.0 252 66.6 <1.0 252 66.6 <1.0 252 66.6 <1.0 252 66.6 <1.0 252 66.6 <1.0 252 66.6 <1.0 252 66.6 <1.0	236 34 5 240 40 8 240 40 8 241 40 8 242 40 40 8 241 34 5 252 2 2 2 242 34 5 252 36 5 254 45 10 254 37.0 13.0 254 45.0 20.7 254 45.0 20.7 254 45.0 20.7 256 55 8 257 52.0 34.0 257 52.0 34.0 258 47 14 230 46 10 258 52 20 258 52 40 258 52 40 258 52 40 258 52 60 258 658 610 258 658 610 258 658 610 258 658 610 258 658 610 258 658 610 258 658 610 258 658 610 258 658 610 258 658 610 258 658 610 258 658 610 258 658 610 258 658 610 258 658 610 258 658 610 258 658 610	34 46 47 44 44 44 44 44 44 44 44 44 44 44 44
240 40 8 240 40 8 238 37 7 238 37 7 240 8 241 34 5 262 37 5 252 36 5 246 45 10 246 45 10 246 45 10 247 39.5 252 34 0 254 43.0 13.0 254 45.0 257 52.0 247 39.5 7.5 219 42 7 219 42 7 219 42 7 219 42 7 219 42 7 219 42 7 219 42 7 219 42 7 219 42 7 219 42 7 219 42 7 228 52 20 228 52 20 238 52 20 247 39.5 7.5 219 46 10 20 226 65.8 < 1.0 0.0 0.0 254 39.0 0.0 0.0 0.0 255 52.4 0.5	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	240 40 8 240 40 8 248 37 7 240 40 8 241 40 8 241 34 5 262 37 5 262 37 5 262 37 5 262 37 5 263 37 6 27 246 45 10 246 45 10 247 39.5 252 20 247 39.5 7.5 219 42 7 219 220 240 55 252 20 247 39.5 7.5 219 42 7 7 219 42 7 7 219 42 7 7 219 42 7 7 219 42 7 7 229 52 20 220 224 39.6 00 00 00 00 254 39.0 00 00 00 00 255 55.8 00 00 00 00 00 195 33.7 00	240 40 8 240 40 8 248 37 7 240 8 37 7 241 34 5 262 37 5 252 36 5 243 42 10 240 37.0 13.0 244 37.0 13.0 244 37.0 13.0 244 45.0 20.7 240 36.0 5.0 244 39.5 17.5 219 42 7 240 36.0 5.0 244 39.5 115 240 36.0 5.0 244 39.5 115 240 246 46 110 240 240 36.0 5.0 244 39.0 0.0 254 39.0 0.0 254 39.0 0.0 256 658 618 260 195 33.7 0.0 270 0.0 271 0.0 272 0.0 273 0.0 274 39.0 0.0 274 39.0 0.0 275 0.0 276 0.0 277 0	240 40 8 240 40 8 248 37 7 240 8 37 7 241 34 5 262 37 5 252 36 5 243 42 10 240 37.0 13.0 244 37.0 13.0 244 37.0 13.0 244 45.0 20.7 240 36.0 5.0 244 45.0 10.0 244 37.0 13.0 244 45.0 20.7 240 36.0 5.0 244 39.5 115 240 46 110 240 240 53 115 240 65.8 610 00 0.0 256 65.8 610 00 0.0 195 33.7 0.0 00 0.0 195 33.7 0.0 00 0.0 195 33.7 0.0 01 0.0 272 66.6 <1.0 01 0.2 272 80.4 0.10	240 34 5 240 8 240 8 240 8 240 8 37 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	240	240 34 5 240 8 240 8 241 40 8 241 34 7 252 2 241 34 5 262 37 5 262 37 5 240 38 10 244 37.0 13.0 244 37.0 13.0 244 45.0 20.7 240 36.0 34.0 244 45.0 20.7 240 36.0 34.0 244 47 14 236 52 20 240 36.0 5.0 254 43.0 10.0 254 37.0 13.0 256 658 47 14 258 658 658 258 658 658 258 658 658 259 666 < 1.0 250 666 < 1.0 251 666 610 252 666 610 253 666 610 253 666 610 254 33.7 0.0 255 666 610 255 666 610
236 34 8 240 40 8 238 37 7 2 2 2 2 2 241 34 5 262 37 7 262 37 5 252 36 5 246 45 10 246 45 10 246 45 10 247 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 255 52 20 256 558 658 61.0 0.0 256 658 658	236 34 8 240 40 8 238 37 7 2 2 2 2 2 241 34 5 262 37 7 262 37 5 262 37 5 264 45 10 246 45 10 246 45 10 247 37.0 13.0 254 45.0 20.7 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 45 10 255 52 20 257 258 52 250 340 260 258 65.8 27 7 28 52 20 28 47 14 29 20 50 20 258 65.8 20 00 20 258 65.8 20 00 20 258 65.8 20 00 20 258 65.8 20 00 20 258 65.8 20 00 20 258 65.8 20 00	236 34 5 240 40 8 238 37 7 2 2 2 2 2 241 34 5 262 37 7 262 37 5 262 37 5 263 37 5 264 45 10 246 45 10 246 45 10 247 37.0 13.0 227 52.0 34.0 247 37.0 13.0 247 37.0 13.0 247 37.0 13.0 247 37.0 13.0 247 37.0 13.0 240 35.0 34.0 240 36.0 5.0 240 36.0 5.0 252 235 50 13  No samples taken in 1994 - No flow.  0.0 255 55.4 0.5 0.0 0.0 0.0 195 33.7 0.0 0.0 0.0 195 33.7 0.0	236 34 8 236 34 8 238 37 7 240 40 8 241 34 8 262 2 2 2 241 34 8 262 36 37 7 246 45 10 246 45 10 247 37.0 13.0 247 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 254 37.0 13.0 255 256 658 47 260 00 00 256 65.8 27.0 28 33.7 00 29 00 195 33.7 00	236 34 8 236 34 8 238 37 7 238 37 7 241 34 8 262 2 2 2 242 24 8 246 45 10 246 45 10 246 45 10 247 35.0 34.0 257 52.0 34.0 257 52.0 34.0 254 43.0 13.0 254 43.0 13.0 254 43.0 10.0 254 43.0 10.0 254 39.5 7.5 258 50 13  No samples taken in 1994 - No flow.  0.0 256 65.8 41 0.0 0.0 256 65.8 41 0.0 0.0 195 33.7 0.0 0.0 0.0 0.0 195 33.7 0.0 0.0 0.0 195 33.7 0.0 0.0 272 86.4 0.10 0.0 272 86.4 0.10 0.0 272 86.4 0.10 0.0 272 86.4 0.10 0.0 272 86.4 0.10 0.0 272 86.4 0.10	236 34 8 240 40 8 241 34 7 2 2 2 2 241 34 5 262 37 7 262 37 5 240 38 10 244 45 10 244 45 0 20,7 240 36 6,0 247 45 0 20,7 240 36 0 10 241 45 0 20,7 240 36 0 10 241 45 0 20,7 240 36 0 10 254 45 0 0,0 254 45 0 10 254 45 0 0,0 254 45 0 0,0 255 52 4 0,0 15 15 256 658 <1,0 255 52.4 0,5 15 257 52.4 0,5 15 258 52.4 0,5 15 258 52.4 0,5 15 258 52.4 0,5 15 258 52.4 0,5 258 52.4	236 34 8 240 40 8 241 34 9 252 2 2 2 241 34 5 262 37 7 240 38 10 244 45 9 244 47 10 240 360 5.0 244 43.0 13.0 244 43.0 13.0 245 44.0 10.0 247 45.0 20.7 240 36.0 5.0 240 36.0 5.0 241 47 14 250 46 10 250 46 10 250 46 10 250 65.8 47 14 250 65.8 47 250 65.8 41 250 65.8 41 250 65.8 41 250 65.8 41 250 65.8 41 250 65.8 41 250 65.8 41 250 65.8 41 250 65.8 41 250 65.8 41 250 65.8 41 250 75 250 65.8 41 250 75 250 7	236 34 8 240 40 8 241 34 6 252 2 2 2 241 34 5 262 37 7 262 37 5 240 38 10 244 45 0 254 45 0 254 45 0 254 45 0 254 45 0 254 39.6 5.0 254 45 0 255 26 55 8 256 55 8 < 1,0 256 55 8 < 1,0 257 256 55 8 258 33.7 0.0 195 33.7 0.0 195 33.7 0.0 252 666 < 1,0 252 265 658 (1,0 252 265 658 (1,0 253 265 658 (1,0 254 39.0 0.0 255 52.4 0.5 195 33.7 0.0 195 33.7 0.0 195 33.7 0.0 252 666 < 1,0 252 666 < 1,0 253 666 < 1,0 254 39.0 0.0 255 52.4 0.5 255 52.4 0.5 256 658 (1,0 257 258 0.4 257 258 0.4 258 0.4 259 0.1 259 0.1
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	238 37 7 3 3 3 3 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5	238 37 7 3 3 3 3 3 4 5 5 6 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	238 37 7 3 3 3 3 4 5 5 6 5 6 5 5 6 5 6 6 6 6 6 6 6 6 6 6
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	241 34 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	241 34 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	241 34 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 3 3 3 2 2 3
241 34 5 3 262 37 5 3 240 38 10 2 246 45 10 4 243 42 10 3 257 520 340 50 254 370 130 1.0 254 370 207 3.7 240 360 50 254 430 100 80 254 430 100 80 254 430 100 80 254 39.5 7.5 65 25 20 11 20 20 4 40 240 53 15 5 25 20 11 25 20 11 26 5 27 5 28 65 29 65 20 20 4 40 4 4 40 240 53 15 5 20 11 22 20 11 23 40 65 24 39.6 65 25 20 11 26 5 27 65 28 65 29 65 20 11 20 4 4 40 240 53 15 5 20 11 21 65 22 7 75 65 23 20 11 24 39.6 65 25 20 11 25 20 11 26 5 27 65 28 65 29 65 20 10 4 40 65 20 0.0 46 20 0.0 46 20 0.0 50 25 5 26 65 27 7 8 8 28 65 29 7 8 8 20 10 65 20 11 65 2	241 34 5 3 262 37 5 3 240 38 10 2 246 45 10 4 247 370 130 1.0 247 36.0 5.0 247 36.0 5.0 248 43.0 10.0 8.0 249 42 7 5 240 36.0 5.0 241 39.5 7.5 6.5 240 36.0 5.0 241 39.5 7.5 6.5 252 20 11 253 52 20 11 264 30.0 6.5 275 5.0 276 6.5 277 6.5 278 6.5 279 40 6.5 270 40 46 270 40 46 270 50 270 40 46 270 6.5 271 6.5 272 7 5 273 6.5 273 6.5 274 39.5 7.5 6.5 275 6.5 276 10 4 4 277 6.5 278 6.5 279 7.5 270 110 4 4 270 6.5 270 110 4 4 270 6.5 271 6.5 271 6.5 272 7 6.5 273 6.5 274 39.0 0.0 46 275 6.5 276 6.5 277 7 6.5 278 6.5 279 7 7 6.5 270 115 270 115 270 115 271 6.5 271 6.5 272 6.5 273 7 6.5 273 7 6.5 274 7 7 6.5 275 6.5 276 110 4 4 277 7 6.5 278 6.5 279 7 7 6.5 270 115 270 115	241 34 5 3 262 37 5 3 240 38 10 2 246 45 10 4 247 370 130 1.0 247 370 207 3.7 240 360 50 254 43.0 100 8.0 254 39.5 7.5 6.5 25 20 11 20 20 4 8 219 42 7 5 219 42 7 5 220 111 228 47 14 8 40 240 53 15 65 25 20 111 26 5 27 65 28 65 29 65 20 116 4 40 40 46 10 4 40 240 53 15 5 25 20 116 26 5 27 6 5 28 65 29 7.5 65 20 116 4 40 6 20 256 658 <10 50 20 256 658 <10 50 20 150 20 150 20 150 20 150 20 150 20 150	241 34 5 3 262 37 5 3 240 38 10 2 246 45 10 4 246 45 10 3 247 370 130 1.0 257 520 340 50 257 520 340 50 254 45.0 20.7 3.7 240 36.0 50 50 254 43.0 10.0 80 247 39.5 7.5 6.5 258 220 1.1 238 42 7 5 240 36.0 50 247 39.5 7.5 6.5 250 11 251 42 7 5 252 20 1.1 253 52 20 1.1 254 40 55 6.5 255 52 6.5 26 10 46 26 00 254 39.0 0.0 4.6 27 00 195 33.7 0.0 15.0 27 00 195 33.7 0.0 15.0	241 34 5 3 262 37 5 3 240 38 10 2 246 45 10 4 246 45 10 3 247 370 130 1.0 257 520 340 50 254 45.0 207 3.7 240 360 50 50 254 430 100 80 254 430 100 80 254 430 100 80 254 39.5 7.5 6.5 258 220 111 228 47 39.5 7.5 6.5 240 250 50 250 00 46 00 256 658 <10 46 00 256 658 <10 50 00 195 33.7 00 150 00 195 33.7 00 150 00 01 195 33.7 00 150 01 272 80.4 100	241 34 5 3 262 37 5 3 240 38 10 2 246 45 10 4 246 45 10 4 247 37.0 13.0 1.0 257 52.0 34.0 5.0 254 45.0 20.7 3.7 240 36 5.0 5.0 5.0 241 39.5 7.5 6.5 252 20 1.1 253 47 14 8 250 46 10 46 254 39.0 0.0 46 255 65.8 <1.0 5.0 256 65.8 <1.0 5.0 150 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 252 66.6 <1.0 10.0 252 66.6 <1.0 17.5	241 34 5 3 262 37 5 3 240 38 10 2 246 45 10 4 246 45 10 3 247 320 340 50 254 45.0 20.7 3.7 240 360 5.0 5.0 5.0 254 43.0 10.0 8.0 247 39.5 7.5 6.5 250 46 10 46 250 50 50 251 40 10 50 252 50 50 254 39.0 0.0 46 255 65.8 <10 50 150 150 150 150 150 252 666 <10 100	241 34 5 3 262 37 5 3 240 38 10 2 246 45 10 4 246 45 10 4 247 320 340 50 257 520 340 50 254 450 207 37 240 360 50 50 254 430 100 80 247 39;5 7;5 6;5 256 658 410 46 258 47 14 8 259 46 250 11 250 50 251 50 252 666 <10 100 253 658 610 254 39;0 00 46 255 658 610 256 658 610 257 50 258 658 610 258 658 610 259 656 <10 100 250 250 251 656 610 252 666 <10 1150 252 666 610 253 175 175 254 175 255 666 610 175
252 37 5 3 252 36 5 3 240 38 10 2 246 45 10 4 243 42 10 4 243 42 10 3 254 320 340 5.0 254 350 5.0 254 330 100 80 254 430 100 80 254 330 100 80 254 330 100 80 255 20 11 228 47 14 8 No samples taken in 1994 - No flow.	240 34 5 3 3 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	241 34 5 3 3 2 2 2 2 3 4 2 2 2 2 2 2 2 2 2 2 2 2	240 34 5 3 3 3 3 3 4 5 5 3 3 3 4 5 5 5 5 5	240 34 5 3 3 3 4 5 5 3 3 5 5 5 5 5 5 5 5 5	241 34 5 3 3 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	241 34 5 3 3 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	241 34 5 3 3 3 2 4 5 3 3 3 3 4 5 5 4 5 4 5 4 5 4 5 4 5 4
252 36 5 3 240 38 10 2 246 45 10 4 243 10 6 4 243 10 6 4 244 370 130 1.0 257 52.0 34.0 5.0 254 45.0 20.7 3.7 240 36.0 5.0 5.0 247 39.5 7.5 6.5 219 42 7 5 220 111 228 47 14 8 40 230 46 10 4 40 230 46 10 4 60 00 254 39.0 0.0 46 0.0 255 658 <10 5.0	246 38 10 2 246 45 10 4 246 45 10 4 247 370 13.0 1.0 257 52.0 34.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 255 52 20 11 228 47 14 8 20 10 240 53 15 5 25 20 11 228 47 14 8 25 236 55 20 26 10 46 27 28 55 20 28 50 10 46 29 20 254 39.0 00 46 20 255 524 0.5 00 1550 20 195 33.7 0.0 1550	252 36 5 3 240 38 10 2 246 45 10 4 246 45 10 4 243 10 23 257 52.0 34.0 5.0 254 35.0 20.7 3.7 240 36.0 5.0 5.0 254 34.0 5.0 254 43.0 10.0 80 254 39.5 7.5 6.5 258 52 20 11 228 47 14 8 240 53 15 5 25 20 11 228 47 14 8 240 53 15 5 25 20 11 228 47 14 8 240 55 65 25 25 20 11 26 25 65 27 65 28 24 10 46 20 0.0 254 39.0 0.0 46 20 0.0 255 658 658 20 0.0 195 33.7 0.0 15.0 20 0.0 195 33.7 0.0 15.0	252 36 5 3 240 38 10 2 246 45 10 4 246 45 10 4 247 370 130 1.0 257 520 340 5.0 254 350 5.0 254 43.0 100 80 254 43.0 100 80 254 43.0 100 80 255 236 52 20 11 228 47 14 8 39.5 7.5 6.5 20 254 39.0 0.0 4.6 0.0 256 65.8 <1.0 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	240 38 10 2 240 38 10 2 246 45 10 4 246 45 10 4 247 370 130 1.0 257 520 340 50 254 450 20.7 3.7 240 360 50 50 247 39.5 7.5 6.5 240 240 33 7 6.5  No samples taken in 1994 - No flow.  0.0 256 658 610 50 0.0 256 658 610 50 0.0 195 33.7 000 150 0.0 195 33.7 000 150 0.0 195 33.7 000 150 0.0 272 86.4 610 250	252 36 5 3 240 38 10 2 246 45 10 4 243 42 10 4 244 37.0 13.0 1.0 257 52.0 34.0 5.0 254 45.0 20.7 3.7 254 43.0 10.0 8.0 254 43.0 10.0 8.0 255 52 20 11 256 52 20 11 256 52 20 11 256 52 20 11 257 52 00 6.5 258 47 14 8 259 46 250 50 46 250 50 46 250 50 13 5 251 90 0.0 46 252 55 52.4 0.5 150 195 33.7 0.0 150 195 33.7 0.0 150 252 566 6.1 0 100 252 252 666 <1.0 175	240 38 10 2 246 45 10 4 243 42 10 4 244 37.0 13.0 1.0 257 52.0 34.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 255 52 20 11 256 52 20 11 256 52 20 11 256 52 20 11 257 52 00 6.5 258 47 14 8 259 46 250 50 46 250 50 46 250 50 46 250 50 13 5 251 95 33.7 0.0 15.0 152 666 <1.0 10.0 252 666 <1.0 17.5	252 36 5 3 240 38 10 2 246 45 10 4 243 42 10 4 244 37.0 13.0 1.0 257 52.0 34.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 255 52 47 14 8 250 50 13 5 256 558 47 14 8 256 558 410 46 256 558 410 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 30.7 0.0 17.5 195 52.2 0.1 1.0
246 45 10 2 246 45 10 4 248 45 10 4 249 45 10 4 249 240 37.0 13.0 1.0 257 52.0 34.0 5.0 254 45.0 20.7 3.7 240 36.0 5.0 8.0 247 39.5 7.5 6.5 219 42 7 5 229 20 11 228 47 14 8 40 230 46 10 4 40 230 46 10 4 60 255 658 610 50 0.0 255 658 610 50	240 38 10 2 246 45 10 4 243 42 10 4 243 42 10 3 254 370 13.0 1.0 257 52.0 34.0 5.0 254 43.0 10.0 80 254 43.0 10.0 80 254 43.0 10.0 80 254 43.0 10.0 80 254 43.0 10.0 80 254 525 20 11 228 42 7 5 236 52 20 11 228 47 14 8 240 240 53 15 5 25 20 11 26 25 20 11 27 5 28 42 7 5 29 65 20 10 46 20 254 39.0 00 46 20 255 65.8 51.0 50 20 155 65.8 51.0 50 20 155 52.4 0.5 150	246 43 10 2 246 45 10 4 246 45 10 4 243 10 44 243 37.0 13.0 1.0 257 52.0 34.0 5.0 254 36.0 5.0 5.0 254 36.0 5.0 5.0 254 36.0 5.0 5.0 254 36.0 5.0 5.0 254 36.0 5.0 5.0 255 25 20 11 228 47 14 8 8 10 230 46 10 4 40 240 53 15 5 25 235 50 13 5 26 0.0 254 39.0 0.0 46 0.0 255 658 658 610 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	246 43 10 2 246 45 10 4 247 42 10 4 243 42 10 4 244 370 130 1.0 257 520 340 50 244 450 207 3.7 240 360 50 50 247 43.0 100 80 247 43.0 100 80 247 39.5 7.5 6.5 219 42 7 5 228 47 14 8 228 47 14 8 8 No samples taken in 1994 - No flow.  0.0 256 65.8 <1.0 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	246 48 10 2 246 45 10 4 247 45 10 4 248 10 4 249 370 130 1.0 257 520 340 5.0 244 45.0 20.7 3.7 240 36.0 5.0 5.0 247 39.5 7.5 6.5 247 39.5 7.5 6.5 248 46 10 4 8  No samples taken in 1994 - No flow.  0.0 256 658 610 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 272 86.4 610 25.0 0.0 256 65.8 610 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 272 86.4 610 25.0	240 38 10 2 246 45 10 4 243 42 10 4 243 37.0 13.0 1.0 257 52.0 34.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 255 52 20 11 256 52 20 11 256 52 20 11 256 52 20 11 257 52 20 11 258 46 10 4 259 46 10 258 52 40 15.0 258 52 40 15.0 258 658 610 50 259 33.7 0.0 15.0 250 666 610 75.0	240 38 10 2 246 45 10 4 243 42 10 4 244 37.0 13.0 1.0 257 52.0 34.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 255 52 20 11 256 52 20 11 256 52 20 11 256 52 20 11 256 52 20 11 257 52 00 11 258 47 14 8 259 46 250 50 46 250 50 46 250 50 150 251 50 150 252 56 65 8 <10 150 252 56 65 <10 150 252 56 65 <10 175 253 56 65 <10 175 254 504 510 255 56 65 510 175	246 48 10 2 246 45 10 4 243 42 10 4 243 42 10 3 204 37.0 13.0 1.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 247 39.5 7.5 65 240 5.2 20 11 228 47 14 8 230 46 10 45 240 5.3 15 5 240 5.3 15 256 658 410 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 666 <1.0 10.0 222 666 <1.0 10.0 252 666 <1.0 10.0 253 666 <1.0 10.0 254 30.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0
246 45 10 4 243 10 4 4 243 10 10 257 520 340 5.0 207 3.7 240 25.0 20.7 3.7 240 25.0 20.7 3.7 240 240 240 240 240 240 240 240 240 240	246 45 10 4 2 4 2 10 4 2 4 3 10 2 4 4 2 10 3 3 1 4 2 10 3 3 4 2 10 3 4 2 10 3 4 2 10 3 4 2 10 3 4 2 10 3 4 2 10 3 4 2 10 3 4 2 2 4 4 3 0 10 0 8 0 2 2 4 3 2 3 2 2 0 11 2 2 8 4 3 1 2 2 2 0 11 2 2 8 4 3 1 2 2 2 2 1 1 2 2 3 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	245 58 10 4 2 4 2 10 4 2 4 3 10 2 4 4 2 10 3 3 4 2 10 3 3 4 2 2 4 4 3 10 3 4 0 5 10 2 4 4 3 10 2 4 4 3 10 2 4 4 3 10 2 4 4 3 10 2 4 4 3 10 3 1 2 2 4 3 10 3 1 2 2 4 3 10 3 1 2 2 4 3 10 3 1 2 2 4 3 10 3 1 2 2 4 3 1 2 2 4 3 1 2 2 4 3 1 2 2 4 3 1 2 2 4 3 1 2 2 4 3 1 2 2 4 3 1 2 2 4 3 1 2 2 4 3 1 2 2 4 3 1 2 2 4 3 1 2 2 4 3 1 2 2 3 3 1 2 3 2 3 3 1 3 2 3 3 1 3 2 3 3 3 1 3 3 1 3 1	244 45 10 4 4 2 10 4 4 2 10 3 3 2 4 3 4 0 5 10 4 4 2 10 3 3 4 2 10 3 4 2 10 3 4 2 10 3 4 2 10 3 4 2 10 3 4 2 10 3 4 2 10 3 4 2 2 4 3 4 2 10 3 4 2 2 3 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2	244 45 10 4 2 10 4 4 2 10 4 4 2 10 3 3	246 45 10 4 243 42 10 4 243 42 10 4 244 37.0 13.0 1.0 257 52.0 34.0 5.0 244 45.0 20.7 3.7 240 36.0 5.0 5.0 247 39.5 7.5 6.5 248 47 14 8 240 53 15 5 240 53 15 5 256 65.8 <10 5.0 256 65.8 <10 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 252 66.6 <1.0 10.0 252 66.6 <1.0 17.5	246 45 10 4 243 42 10 4 243 42 10 4 244 37.0 13.0 1.0 257 52.0 34.0 5.0 244 45.0 20.7 3.7 240 36.0 5.0 5.0 241 43.0 10.0 8.0 242 43.0 10.0 8.0 243 42 7 5 256 52 20 11 258 47 14 8 240 53 15 5 256 65.8 <10 46 256 65.8 <10 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 252 66.6 <1.0 10.0 252 66.6 <1.0 17.5	246 55 10 4 2 4 2 4 3 10 4 4 2 4 3 10 4 4 4 2 10 3 3 4 4 2 10 3 4 4 2 10 3 4 4 4 4 4 5 10 4 4 4 4 5 10 207 37 37 37 39.5 7.5 6.5 240 5.3 6.5 240 5.3 6.5 240 5.3 6.5 240 5.3 6.5 240 5.3 6.5 240 5.3 6.5 240 5.3 6.5 240 5.3 6.5 256 6.5 8 4 2 6.5 256 6.5 8 4 2 6.5 256 6.5 8 4 2 6.5 256 6.5 8 4 2 6.5 256 6.5 8 4 2 6.5 256 6.5 8 4 2 6.5 256 6.5 8 4 2 6.5 256 6.5 8 4 2 6.5 252 6.6 6 6.1 0 10.0 25.0 252 6.6 6 6.1 0 17.5 17.5 17.5 17.5 17.5 17.5 17.5 17.5
243 42 10 3  204 370 130 1.0  257 52.0 34.0 5.0  240 36.0 5.0 5.0  240 36.0 5.0 5.0  241 39.5 7.5 6.5  219 42 7 5  219 42 7 5  219 42 7 5  219 42 7 5  219 42 7 5  219 42 7 5  220 111  228 47 14 8  40 230 46 10 4  40 230 50 13 5  No samples taken in 1994 - No flow.	243 42 10 3  204 370 130 1.0  257 52.0 34.0 5.0  240 36.0 5.0 5.0  240 36.0 5.0 5.0  247 39.5 7.5 6.5  219 42 7 5  228 47 14 8  40 240 53 15 5  25 235 50 11  80 46 10 4  40 240 53 15 5  No samples taken in 1994 - No flow.	243 42 10 3  204 370 130 1.0  257 52.0 34.0 5.0  240 36.0 5.0 5.0  241 39.5 7.5 6.5  219 42 7 5  229 47 39.5 7.5 6.5  236 52 20 11  238 47 14 8  40 240 53 15 5  25 235 50 13 5  No samples taken in 1994 - No flow.  00 255 658 658 610 540  00 195 33.7 00 150  00 195 33.7 00 150	243 42 10 3 244 370 130 1.0 257 52.0 34.0 5.0 244 45.0 20.7 3.7 246 36.0 5.0 5.0 247 39.5 7.5 6.5 219 42 7 5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 13 5  No samples taken in 1994 - No flow.  0.0 256 65.8 <10 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	243 42 10 3 244 370 130 1.0 257 52.0 34.0 5.0 244 45.0 20.7 3.7 246 36.0 5.0 5.0 247 39.5 7.5 6.5 219 42 7 5 228 47 14 8 240 240 33 15 5 25 235 50 11 5 25 235 50 11 5 26 0.0 254 39.0 0.0 4.6 0.0 255 65.8 <10 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 272 66.6 <1.0 10.0 250 250 65.8 <10 5.0 251 252 65.8 13.0 0.0 15.0 252 253 52.4 0.5 13.0 253 254 255 52.4 0.5 13.0 254 255 52.4 0.5 13.0 255 52.4 0.5 13.0 256 53.8 13.7 0.0 15.0 257 258 53.4 13.0 0.0 15.0 258 258 52.4 0.5 15.0 259 259 53.7 0.0 15.0	243 42 10 3 244 37.0 1130 1.0 257 52.0 34.0 5.0 244 45.0 20.7 3.7 240 36.0 5.0 5.0 241 39.5 7.5 6.5 242 47 14 8 240 53 15 5 240 53 15 5 256 65.8 <10 46 256 65.8 <10 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 252 66.6 <1.0 17.5	243 42 10 3 294 37.0 1130 1.0 237 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 241 39.5 7.5 6.5 226 44 10 4 230 46 10 46 230 46 10 46 231 39.0 0.0 46 232 65.8 <1.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5	243 42 10 3 294 37.0 13.0 1.0 237 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 241 39.5 7.5 6.5 226 52 20 1.1 230 46 10 4 240 53 15 5 240 53 15 5 254 39.0 0.0 4.6 255 65.8 <1.0 15.0 195 33.7 0.0 15.0
204 370 130 1.0 257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 254 43.0 100 8.0 247 39.5 7.5 6.5 219 42 7 5 228 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.	204 37.0 13.0 1.0 257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 5.0 247 39.5 7.5 6.5 219 42 7 5 228 47 14 8 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.	204 370 130 1.0 257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 254 43.0 100 8.0 254 43.0 100 8.0 255 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.  0.0 255 65.8 61.0 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	204 370 130 1.0 257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 255 52 20 1.1 228 47 14 8 40 240 53 15 5 25 235 50 13 5  No samples taken in 1994 - No flow.  0.0 256 65.8 <10 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	204 370 130 1.0 257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 254 43.0 10.0 8.0 247 39.5 7.5 6.5 219 42 7 5 236 52 20 1.1 228 47 14 8 40 240 53 15 5 25 235 50 13 5 5 No samples taken in 1994 - No flow.  0.0 256 65.8 <10 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 272 66.6 <1.0 10.0 251 56.0 <20 56.0 57.0 57.0 252 56.0 57.0 57.0 15.0 253 56.0 <20 57.0 15.0 254 57.0 15.0 255 57.0 10.0 15.0 257 57.0 10.0 15.0	204 37.0 13.0 1.0 257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 244 43.0 10.0 8.0 247 39.5 7.5 6.5 226 52 20 11 228 47 14 8 240 53 15 5 230 46 10 4 240 53 15 5 235 50 13 5 256 65.8 <10 5.0 256 65.8 <10 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5	294 37.0 13.0 1.0 257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 241 39.5 7.5 6.5 219 42 7 5 226 52 20 11 228 47 14 8 230 46 10 4 240 53 15 5 235 50 13 5 256 65.8 <10 5.0 256 65.8 <10 46 256 65.8 <10 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5	294 37.0 13.0 1.0 257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 241 43.0 10.0 8.0 242 42 7 6.5 226 52 20 1.1 226 46 10 4 240 53 15 5 230 46 10 4 240 53 15 5 235 50 13 5 256 65.8 <1.0 5.0 150 150 150 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 30.4 <1.0 25.0 252 66.6 <1.0 17.5 252 66.6 <1.0 17.5 253 66.6 <1.0 17.5
204 370 13.0 1.0 257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 247 39.5 7.5 6.5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 20 11 25 235 50 13 5 No samples taken in 1994 - No flow.	254 370 13.0 1.0 257 52.0 34.0 5.0 254 45.0 20.7 3.7 240 36.0 5.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 258 47 14 8 240 240 53 15 5 25 235 50 13 5 25 235 50 13 5 26 0.0 254 39.0 0.0 46 20 0.0 255 65.8 <1.0 5.0 250 195 33.7 0.0 150	204 370 13.0 1.0 257 52.0 34.0 5.0 254 45.0 20.7 3.7 240 36.0 5.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 254 39.5 7.5 6.5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 13 5  No samples taken in 1994 - No flow.  0.0 256 65.8 < 1.0 46 0.0 256 65.8 < 1.0 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	204 37.0 13.0 1.0 257 52.0 34.0 5.0 254 45.0 20.7 3.7 240 36.0 5.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 255 52 20 11 258 42 7 5 258 52 20 11 258 47 14 8 240 240 53 15 5 25 20 11 258 47 14 8 8 No samples taken in 1994 - No flow.	204 370 13.0 1.0 237 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 5.0 247 39.5 7.5 6.5 219 42 7 5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 20 11 228 47 14 8 No samples taken in 1994 - No flow.  0.0 256 65.8 <10 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 272 66.6 <1.0 10.0 210 222 66.6 <1.0 10.0 211 222 223 233 234 235 235 235 235 235 235 235 235 235 235	244 37.0 13.0 1.0 257 52.0 34.0 5.0 254 45.0 20.7 3.7 240 36.0 5.0 5.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 255 52 20 11 256 52 20 11 250 46 10 4 250 53 15 5 250 13 5 250 65.8 4.0 0.0 4.6 256 65.8 4.0 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 252 66.6 <1.0 10.0 252 66.6 <1.0 17.5	244 37.0 13.0 1.0 257 52.0 34.0 5.0 254 45.0 20.7 3.7 240 36.0 5.0 5.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 255 52 20 11 256 52 20 11 250 46 10 4 250 53 15 5 256 65.8 410 50 256 65.8 410 50 255 52.4 0.5 48 256 55.8 410 50 257 55.0 110 258 65.8 410 50 259 527 66.6 <1.0 10.0 250 550 65.6 <1.0 15.0 251 550 65.6 <1.0 17.5 252 66.6 <1.0 17.5 253 550 550 254 510 525 255 550 550 255 550 550 255 550 550 255 550 550 255 550 550 255 550 550 255 550 550 255 550 550 255 550 550 255 550 550 255 550 550 255 550 550 255 550 550 255 550 550 255 550 550 255 550 550 255 550 550 255	244 37.0 13.0 1.0 257 52.0 34.0 5.0 240 36.0 5.0 5.0 5.0 244 43.0 10.0 8.0 247 39.5 7.3 6.5 219 42 7 5 226 46 10 4 220 53 11 220 46 10 4 220 53 15 5 235 50 13 5 256 65.8 <10 66 255 52.4 0.5 150 150 195 33.7 0.0 150 195 33.7 0.0 150 195 33.7 0.0 150 195 33.7 0.0 150 195 33.7 0.0 150 195 33.7 0.0 150 195 33.7 0.0 150 150 252 66.6 <1.0 175 195 22 0.1 1.0
257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 254 43.0 10.0 8.0 247 39.5 7.5 6.5 236 52 20 11 228 47 14 8 40 230 46 10 4 40 230 46 10 4 40 255 52.0 13 5 00 254 39.0 0.0 46 00 255 65.8 <10 5.0	257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 254 43.0 10.0 8.0 247 39.5 7.5 6.5 219 42 7 5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.	257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 247 39.5 7.5 6.5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.  0.0 256 6.58 < 1.0 5.0 0.0 256 6.58 < 1.0 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 254 43.0 10.0 8.0 247 39.5 7.5 6.5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 20 11 228 47 14 8  00 236 65.8 15 5 00 256 65.8 <10 50 00 255 65.8 <10 50 00 195 33.7 00 15.0 00 195 33.7 00 15.0	257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 254 43.0 10.0 8.0 247 39.5 7.5 6.5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 20 11 28 47 14 8 No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6 0.0 255 65.8 <10 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 272 66.6 <1.0 10.0 210 272 66.6 <1.0 10.0 250 272 80.4 <1.0 25.0	257 52.0 34.0 5.0 224 45.0 20.7 3.7 240 36.0 5.0 5.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 255 52 20 11 258 47 14 8 240 53 15 5 250 46 10 4 250 53 15 5 256 65.8 <1.0 5.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 252 66.6 <1.0 10.0 252 66.6 <1.0 17.5	257 52.0 34.0 5.0 224 45.0 20.7 3.7 240 36.0 5.0 5.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 255 52 20 11 258 47 14 8 250 46 10 4 250 53 15 5 256 65.8 <1.0 5.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 222 66.6 <1.0 10.0 252 66.6 <1.0 17.5	257 52.0 34.0 5.0 234 45.0 20.7 3.7 240 36.0 5.0 5.0 5.0 254 43.0 10.0 8.0 247 39.5 7.5 6.5 236 52 20 11 236 46 10 4 240 53 15 5 236 56.8 10 46 256 65.8 <10 46 256 65.8 <10 46 256 65.8 <10 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5 307 80.4 34.0 47.5
240 45.0 20.7 3.7 2.4 2.0 2.4 2.0 2.0 2.4 3.0 2.0 2.4 3.0 2.0 2.4 3.0 2.4 3.0 2.4 3.0 2.4 3.0 2.4 3.0 2.4 3.0 2.4 3.0 2.4 3.0 2.4 3.0 2.4 3.0 2.4 3.0 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4	240 45.0 207 3.7 240 36.0 5.0 254 43.0 10.0 8.0 247 39.5 7.5 6.5 219 42 7 5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.	240 45.0 20.7 3.7 240 36.0 5.0 5.0 254 43.0 10.0 8.0 247 39.5 7.5 6.5 219 42 7 5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 113 5 No samples taken in 1994 - No flow.  0.0 256 658 <10 5.0 0.0 256 658 0.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	240 36.0 207 3.7 240 36.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 247 39.5 7.5 6.5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 13 5  No samples taken in 1994 - No flow.  0.0 256 658 <1.0 5.0 0.0 255 52.4 0.5 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	240 45.0 207 3.7 240 36.0 5.0 254 43.0 10.0 8.0 247 39.5 7.5 6.5 219 42 7 5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 13 5  No samples taken in 1994 - No flow.  0.0 256 65.8 <10 50 0.0 256 65.8 <10 50 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 232 66.6 <10 15.0 0.0 232 66.6 <10 15.0 0.0 232 66.6 <10 15.0 0.0 232 66.6 <10 15.0 0.0 232 66.6 <10 25.0	240 36.0 20.7 3.7  240 36.0 5.0 5.0  241 43.0 10.0 8.0  247 39.5 7.5 6.5  236 52 20 11  238 47 14 8  240 53 15 5  239 46 10 4  240 53 15 5  254 39.0 0.0 4.6  256 65.8 <1.0 5.0  195 33.7 0.0 15.0  195 33.7 0.0 15.0  195 33.7 0.0 15.0  222 66.6 <1.0 10.0  222 66.6 <1.0 17.5	240 36.0 20.7 3.7 2.7 2.4 45.0 20.7 3.7 2.4 45.0 20.7 3.7 2.5 2.4 43.0 10.0 8.0 2.2 2.2 11 2.2 2.4 2.2 2.2 11 2.2 2.4 2.2 2.4 2.2 2.4 2.2 2.4 2.2 2.4 2.2 2.4 2.2 2.4 2.2 2.4 2.2 2.4 2.2 2.4 2.2 2.4 2.2 2.4 2.4	240 36.0 20.7 3.7  240 36.0 5.0 5.0  241 43.0 10.0 8.0  242 43.0 10.0 8.0  236 52 20 11  230 46 10 4  240 53 15 5  234 39.0 0.0 46  256 65.8 <10 50  195 33.7 0.0 15.0  195 33.7 0.0 15.0  195 33.7 0.0 15.0  222 66.6 <1.0 10.0  222 66.6 <1.0 17.5  195 22 0.1 1.0  237 80.4 1.0  46
240 360 5.0 5.0 5.0 254 43.0 10.0 8.0 247 39.5 7.5 6.5 236 22 20 11 228 47 14 8 8 25 25 25 25 25 25 25 25 25 25 25 25 25	240 360 50 50 50 254 43.0 10.0 8.0 254 43.0 10.0 8.0 8.0 247 39.5 7.5 6.5 236 52 20 11 228 47 14 8 8 40 240 240 53 15 50 113 5 5 50 13 5 50 0.0 256 6.58 6.10 46 0.0 256 6.58 6.10 46 0.0 256 6.58 6.10 5.0 5.0 0.0 1550 6.	240 360 5.0 5.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 8.0 247 39.5 7.5 6.5 236 5.2 20 11 5 228 47 14 8 8 11 5 236 5.0 11 25 240 5.3 20 11 5 5 20 11 2 28 20 11 2 28 20 11 2 28 20 11 2 28 20 11 2 28 20 20 20 20 20 20 20 20 20 20 20 20 20	240 360 5.0 5.0 5.0 254 43.0 10.0 8.0 247 39.5 7.5 6.5 236 228 47 14 8 8 236 236 236 23 20 111 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	240 360 5.0 5.0 5.0 254 43.0 10.0 8.0 254 43.0 10.0 8.0 8.0 247 39.5 7.5 6.5 2.0 111 228 47 14 8 8 2.2 20 111 228 47 14 8 8 2.2 20 111 228 20 111 228 20 111 228 20 111 228 20 20 111 228 20 20 20 240 246 246 246 25 20 25 25 25 25 25 25 25 24 25 20 20 256 65.8 21.0 256 65.8 21.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25	240 36.0 5.0 5.0 5.0 2.4 2.2 4.3.0 10.0 8.0 2.4 3.0 10.0 8.0 8.0 2.2 2.2 2.2 1.1 5.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2	240 36.0 5.0 5.0 5.0 2.4 43.0 10.0 8.0 2.4 43.0 10.0 8.0 8.0 2.1 3.5 5.2 20 1.1 5.2 2.2 1.1 8.2 2.2 2.1 1.4 8.2 2.2 2.2 1.1 5.2 2.2 2.2 1.1 5.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2	240 360 5.0 5.0 5.0 2.4 2.1 2.1 2.2 2.2 2.0 1.1 2.2 2.2 2.0 1.1 2.2 2.0 1.1 2.2 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0
254 43.0 10.0 8.0 247 39.5 7.5 6.5 219 42 7 5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 11 No samples taken in 1994 - No flow.	254 43.0 10.0 8.0 247 39.5 7.5 6.5 219 42 7 5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 11  No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 46 0.0 255 55.4 0.5 0.0 195 33.7 0.0 150	254 43.0 10.0 8.0 247 39.5 7.5 6.5 219 42 7 5 226 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 11  No samples taken in 1994 - No flow.  0.0 254 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	254 43.0 10.0 80 247 39.5 7.5 6.5 219 42 7 5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 25 20 11 A0 240 53 15 5 A0 240 53 15 5 A0 240 53 15 5 A0 255 50 13 5 A0 0.0 256 65.8 <1.0 5.0 0.0 255 65.8 <1.0 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	254 43.0 10.0 8.0 247 39.5 7.5 6.5 219 42 7 5 236 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 11  No samples taken in 1994 - No flow.  0.0 256 65.8 <1.0 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 222 66.6 <1.0 10.0 210 222 66.6 <1.0 10.0 210 222 66.6 <1.0 10.0 211 222 66.6 <1.0 10.0 212 256 558 21.0 25.0	234 43.0 10.0 80 247 39.5 7.5 6.5 219 42 7 5 226 52 20 11 228 47 14 8 240 53 15 5 235 50 13 5 235 50 13 5 246 558 <1.0 46 256 658 <1.0 46 256 558 <1.0 5.0 255 52.4 0.5 150 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 666 <1.0 10.0 222 666 <1.0 17.5	254 43.0 10.0 80 247 39.5 7.5 6.5 219 42 7 5 226 52 20 11 228 47 14 8 240 53 15 5 235 50 13 5 235 50 13 5 256 65.8 <1.0 5.0 256 65.8 <1.0 5.0 255 52.4 0.5 48 150 195 33.7 0.0 15.0 195 33.7 0.0 15.0 252 66.6 <1.0 10.0 272 80.4 <1.0 25.0 252 66.6 <1.0 17.5	244 43.0 10.0 80 247 39.5 7.5 6.5 219 42 7 5 226 52 20 11 228 47 14 8 240 53 15 5 235 50 13 5 235 50 13 5 236 65.8 <1.0 60 235 52.4 0.5 48 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5 232 66.6 <1.0 17.5 232 66.6 <1.0 17.5 232 66.6 <1.0 17.5 233 7 0.0 17.5 24 0.5 48 25 66.6 <1.0 17.5 27 80.4 10 17.5 28 66.6 <1.0 17.5
219 42 7 5 236 52 20 11 228 47 14 8 10 230 46 10 4 40 240 53 15 5 25 235 50 11 No samples taken in 1994 - No flow.	219 42 7 5 236 52 20 11 228 47 14 8 10 230 46 10 4 40 240 53 15 5 25 235 50 11 25 235 50 13 5 No samples taken in 1994 - No flow.	219 42 7 5 226 52 20 11 228 47 14 8 10 230 46 10 4 40 240 53 15 5 25 235 50 11  No samples taken in 1994 - No flow.  0.0 254 337 0.0 150 0.0 195 337 0.0 150 0.0 195 337 0.0 150	219 42 7 5 236 52 20 11 228 47 144 8 10 230 46 10 4 40 240 53 15 25 235 50 11  No samples taken in 1994 - No flow.  0.0 256 65.8 < 1.0 5.0 0.0 255 52.4 0.5 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	219 42 7 5 236 52 20 11 228 47 144 8 10 230 46 10 4 40 240 53 15 5 25 235 50 11 25 235 50 13 5  No samples taken in 1994 - No flow.  00 256 65.8 <1.0 50 00 195 33.7 0.0 15.0 00 195 33.7 0.0 15.0 010 222 66.6 <1.0 10.0 010 222 66.6 <1.0 10.0 010 222 66.6 <1.0 10.0 010 222 66.6 <1.0 10.0 010 222 66.6 <1.0 10.0	219 42 7 5 236 52 20 11 228 47 14 8 240 53 15 5 230 46 10 4 240 53 15 5 235 50 13 5 235 50 13 6 256 658 <1.0 5.0 256 658 <1.0 5.0 255 52.4 0.5 48 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 666 <1.0 10.0 222 666 <1.0 17.5	219 42 7 5 236 52 20 11 228 47 14 8 240 53 15 5 230 46 10 4 240 53 15 5 235 50 13 5 235 50 13 5 235 50 00 46 256 658 <1.0 5.0 255 52.4 0.5 48 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 666 <1.0 10.0 222 666 <1.0 17.5	219 42 7 5 236 52 20 11 228 47 144 8 240 53 15 4 240 53 15 5 235 50 13 5 235 50 13 5 235 50 00 46 256 658 <1.0 50 195 33.7 0.0 150 195 33.7 0.0 150 195 33.7 0.0 150 195 33.7 0.0 150 222 666 <1.0 100 222 666 <1.0 100 222 666 <1.0 175 195 30.4 10 175
219 42 7 5 226 52 20 11 228 47 14 8 40 230 46 10 4 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6 0.0 255 65.8 <10 5.0 0.0 255 65.8 <10 5.0	219 42 7 5 236 52 20 11 228 47 14 8 10 230 46 10 4 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.  00 254 390 00 46 00 255 658 <10 50 00 255 52.4 0.5 0.0	219 42 7 5 226 52 20 11 228 47 14 8 10 230 46 10 4 40 240 53 15 5 25 235 50 113 5 No samples taken in 1994 - No flow.  00 254 39.0 00 46 00 00 195 33.7 00 150 00 195 33.7 00 150	219 42 7 5 236 52 20 11 228 47 14 8 10 230 46 10 4 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.  00 254 39.0 00 4.6 0.0 255 65.8 <1.0 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	219 42 7 5 236 52 20 111 228 47 14 8 10 230 46 10 4 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.  0.0 256 658 <1.0 5.0 0.0 255 52.4 0.5 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 232 666 <1.0 15.0 0.10 232 666 <1.0 15.0 0.10 232 864 <1.0 25.0	219 42 7 5 226 52 20 111 228 47 14 8 230 46 10 4 240 53 15 5 235 50 13 5 235 68 <10 46 256 68 <10 00 46 256 524 0.5 48 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 272 666 <10 10.0 272 666 <10 17.5	219 42 7 5 226 52 20 111 228 47 14 8 240 53 15 5 240 53 15 5 240 53 15 5 240 65 8 10 4 240 53 15 5 255 65 8 <10 50 255 52.4 0.5 48 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 272 66 6 <1.0 10.0 272 66 6 <1.0 10.0 272 66 6 <1.0 10.0 273 66 6 <1.0 17.5	219 42 7 5 226 52 20 111 228 47 14 8 230 46 10 4 240 53 15 5 235 50 13 5 235 16 658 <10 6 256 658 <10 6 256 658 <10 6 255 52.4 0.5 150 195 33.7 0.0 150 195 33.7 0.0 150 222 666 <10 100 222 666 <10 100 222 666 <10 175 195 33.7 0.0 150 195 33.7 0.0 150 195 33.7 0.0 150 222 666 <10 100 225 666 <10 100 227 804 <10 175
236 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.	236 52 20 11 228 47 14 8 10 230 46 10 4 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.	236 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 11 5 No samples taken in 1994 - No flow. 0.0 256 658 <10 5.0 0.0 256 658 <10 5.0 0.0 255 524 0.5 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	236 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 11 6 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.	256 52 20 11 228 47 14 8 40 240 53 15 5 25 235 50 11 6 40 4 40 4 4 40 4 4 40 4 4 50 13 5 No samples taken in 1994 - No flow. 0.0 256 658 <1.0 5.0 0.0 256 658 <1.0 5.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 222 666 <1.0 15.0 0.0 232 666 <1.0 15.0	236 52 20 11 228 47 14 8 240 53 15 5 230 46 10 4 240 53 15 5 235 50 13 5 235 658 <10 50 256 658 <10 50 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 272 666 <10 10.0 272 666 <10 17.5	236 52 20 11 228 47 14 8 240 53 15 5 240 53 15 5 240 53 15 5 240 65 8 10 4 255 65 8 <10 50 150 150 195 33.7 0.0 150 195 33.7 0.0 150 272 66 6 <10 100 272 66 6 <10 100 272 66 6 <10 100	236 52 20 11 228 47 14 8 240 53 15 5 230 46 10 4 240 53 15 5 235 50 13 5 235 658 <10 50 225 658 <10 50 235 52.4 0.5 48 195 33.7 0.0 150 195 33.7 0.0 150 222 666 <10 100 222 666 <10 100 222 666 <10 100 222 666 <10 175 307 804 340 475
10 230 46 10 4 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6 0.0 255 65.8 <1.0 5.0 0.0 255 65.8 <1.0 5.0	10 230 46 10 4 8 10 4 40 240 53 13 5 5 13 5 5 10 8 8 10 8 10 8 10 8 10 8 10 8 10	10 230 46 10 4 8 10 4 4 10 8 8 10 240 240 53 115 5 5 10 10 8 10 10 10 10 10 10 10 10 10 10 10 10 10	10 230 46 10 4 40 240 53 115 5 25 235 50 113 5 No samples taken in 1994 - No flow.  0.0 256 65.8 <1.0 5.0 0.0 255 52.4 0.5 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	10 230 46 10 4 8 1 14 8 8 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	238 47 14 8 230 46 10 4 240 53 15 5 225 50 13 5 Les taken in 1994 - No flow.  254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5	238 47 14 8 230 46 10 4 240 53 15 5 235 50 13 5 13 5 254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 10.0	238 47 14 81 230 46 10 4 240 53 15 5 235 50 13 5 224 390 00 46 226 658 <10 50 225 52.4 0.5 195 33.7 00 150 195 33.7 00 150 222 666 <10 100 222 666 <10 100 222 666 <10 17.5 195 22 0.1 1.0
10 230 46 10 4 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.	10 230 46 10 4 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow. 00 254 390 0.0 4.6 0.0 256 658 <1.0 5.0 0.0 255 52.4 0.5 4.8	10 230 46 10 4 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.  0.0 256 658 <10 50 0.0 256 658 <10 50 0.0 256 658 <10 50 0.0 195 33.7 00 150 0.0 195 33.7 00 150	10 230 46 10 4 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6 0.0 255 65.8 <1.0 5.0 0.0 255 52.4 0.5 4.8 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	10 230 46 10 4 40 240 53 15 5 25 235 50 13 5 No samples taken in 1994 - No flow.  00 254 39.0 0.0 4.6 0.0 255 65.8 <1.0 5.0 0.0 255 52.4 0.5 4.8 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.10 222 66.6 <1.0 10.0 <1.0 222 66.6 <1.0 10.0	230 46 10 4 240 53 15 5 225 50 13 5 les taken in 1994 - No flow.  254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5	230 46 10 4 240 53 15 5 235 50 13 5 les taken in 1994 - No flow.  254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5	230 46 10 4 240 53 15 5 235 50 13 5 les taken in 1994 - No flow.  254 390 00 46 256 658 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5 195 22 0.1 1.0
10 250 40 10 4 25 235 50 13 5 26 235 50 13 5 No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6 0.0 255 65.8 <10 5.0 0.0 255 65.8 <10 5.0	10 250 45 10 4 4 10 4 4 10 4 4 10 4 4 10 10 4 4 10 10 10 10 10 10 10 10 10 10 10 10 10	10 250 40 10 4 25 235 50 13 5 26 235 50 13 5 No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6 0.0 255 65.8 <1.0 5.0 0.0 255 52.4 0.5 4.8 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	No samples taken in 1994 - No flow.  0.0	No samples taken in 1994 - No flow.  0.0	250 45 15 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	250 45 10 4 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	250 45 10 4 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
25 235 50 13 5  No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6  0.0 256 65.8 <1.0 5.0  0.0 255 52.4 0.5	25 235 50 13 5  No samples taken in 1994 - No flow.  0.0 254 39.0 00 4.6  0.0 255 65.8 <1.0 5.0  0.0 255 52.4 0.5  0.0 195 33.7 0.0 15.0	25 235 50 13 5  No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6 0.0 256 65.8 <1.0 5.0 0.0 255 52.4 0.5 4.8  0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	25 235 50 13 5 No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6  0.0 255 65.8 <1.0 5.0  0.0 255 52.4 0.5 4.8  0.0 195 33.7 0.0 15.0  0.0 195 33.7 0.0 15.0	25 235 50 13 5 No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6  0.0 255 65.8 <1.0 5.0  0.0 255 52.4 0.5 4.8  0.0 195 33.7 0.0 15.0  0.0 195 33.7 0.0 15.0  <1.0 232 66.6 <1.0 10.0  <1.0 232 66.6 <1.0 10.0  <1.0 222 80.4 <1.0 25.0	235 50 13 5 5 1 13 5 5 1 14 14 14 14 14 14 14 14 14 14 14 14 1	235 50 13 5 les taken in 1994 - No flow.  254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5	235 50 13 5 5 1 13 15 15 15 15 15 15 15 15 15 15 15 15 15
No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6  0.0 256 65.8 <1.0 5.0  0.0 255 \$2.4 0.5	No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6  0.0 256 65.8 <1.0 5.0  0.0 255 52.4 0.5 4.8  0.0 195 33.7 0.0 15.0	No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6  0.0 256 65.8 <1.0 5.0  0.0 255 52.4 0.5 4.8  0.0 195 33.7 0.0 15.0  0.0 195 33.7 0.0 15.0	No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6  0.0 255 65.8 <1.0 5.0  0.0 255 52.4 0.5 4.8  0.0 195 33.7 0.0 15.0  0.0 195 33.7 0.0 15.0	No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6  0.0 255 65.8 <1.0 5.0  0.0 255 52.4 0.5 4.8  0.0 195 33.7 0.0 15.0  0.0 195 33.7 0.0 15.0  <1.0 232 66.6 <1.0 10.0  <1.0 222 86.6 <1.0 10.0  <1.0 222 86.4 <1.0 25.0	Les taken in 1994 - No flow.  254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5	Les taken in 1994 - No flow.  254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5	Les taken in 1994 - No flow.  254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 232 66.6 <1.0 10.0 272 80.4 <1.0 25.0 252 66.6 <1.0 17.5 195 2.2 0.1 1.0 307 80.4 34.0 47.5
No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6  0.0 256 65.8 <1.0 5.0  0.0 255 \$2.4 0.5 4.8	No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6  0.0 256 65.8 <1.0 5.0  0.0 255 52.4 0.5 4.8  0.0 195 33.7 0.0 15.0	No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6  0.0 256 65.8 <1.0 5.0  0.0 255 52.4 0.5 4.8  0.0 195 33.7 0.0 15.0  0.0 195 33.7 0.0 15.0	No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6  0.0 255 65.8 <1.0 5.0  0.0 255 52.4 0.5 4.8  0.0 195 33.7 0.0 15.0  0.0 195 33.7 0.0 15.0  0.0 195 33.7 0.0 15.0	No samples taken in 1994 - No flow.  0.0 254 39.0 0.0 4.6  0.0 255 65.8 <1.0 5.0  0.0 255 52.4 0.5 4.8  0.0 195 33.7 0.0 15.0  0.0 195 33.7 0.0 15.0  <1.0 232 66.6 <1.0 15.0  <1.0 232 66.6 <1.0 10.0  <1.0 222 80.4 <1.0 25.0	Les taken in 1994 - No flow.  254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5	154 - No flow.  254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5	Les taken in 1994 - No flow.  254 390 00 46 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 80.4 <1.0 25.0 252 66.6 <1.0 17.5 195 2.2 0.1 1.0 307 80.4 34.0 47.5
0.0 254 39.0 0.0 4.6 0.0 256 65.8 <1.0 5.0 0.0 255 52.4 0.5 4.8	0.0 254 39.0 0.0 4.6 0.0 256 65.8 <1.0 5.0 0.0 255 52.4 0.5 1.8 0.0 15.0 0.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.	0.0 254 39.0 0.0 4.6 0.0 256 65.8 <1.0 5.0 0.0 255 52.4 0.5 4.8 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	0.0 254 39.0 0.0 4.6 0.0 256 65.8 <1.0 5.0 0.0 255 52.4 0.5 4.8 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0	0.0 254 39.0 0.0 4.6 0.0 256 65.8 <1.0 5.0 0.0 255 65.8 <1.0 5.0 0.0 195 33.7 0.0 150 0.0 195 33.7 0.0 150 0.0 195 33.7 0.0 150 0.0 232 66.6 <1.0 10.0 <1.0 272 80.4 <1.0 25.0	254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 222 66.6 <1.0 17.5 256 66.0 17.5	254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 232 66.6 <1.0 10.0 222 80.4 <1.0 25.0 252 66.6 <1.0 17.5	254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 232 66.6 <1.0 10.0 272 80.4 <1.0 25.0 252 66.6 <1.0 17.5 195 2.2 0.1 1.0 307 80.4 34.0 47.5
254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8	254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0	254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0	254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0	254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 252 66.6 <1.0 10.0 272 80.4 <1.0 25.0	254       39.0       0.0       4.6         256       65.8       <1.0	254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 15.0 195 33.7 0.0 15.0 222 66.6 <1.0 10.0 252 66.6 <1.0 17.5 252 66.6 <1.0 17.5 252 25.0 25.0 25.0 25.0 25.0 25.0 25.	254     39.0     0.0     4.6       256     65.8     <1.0
254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8	254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0	254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 195 33.7 0.0 15.0	254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0	254     39.0     0.0     4.6       256     65.8     <1.0	254     39.0     0.0     4.6       256     65.8     <1.0	254 39.0 0.0 4.6 256 65.8 <1.0 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 232 66.6 <1.0 10.0 272 80.4 <1.0 25.0 252 66.6 <1.0 17.5	254     39.0     0.0     4.6       256     65.8     <1.0
0.0 256 65.8 <1.0 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0.0 255 52.4 0.5 4.8 0.0 150 0	0.0 255 52.4 0.5 4.8 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 15.0 0.0 15.0 15.0 15.0 15	0.0 255 524 0.5 4.8 0.0 150 0.0 195 33.7 0.0 15.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 256 52.4 0.5 4.8 0.0 1.0 5.0 0.0 1.0 1.0 1.5 0.0 1	255 52.4 0.5 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 232 66.6 <1.0 10.0 252 66.6 <1.0 17.5	255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 232 66.6 <1.0 10.0 272 80.4 <1.0 25.0 252 66.6 <1.0 17.5	255 52.4 0.5 5.0 255 52.4 0.5 4.8 195 33.7 0.0 15.0 195 33.7 0.0 15.0 232 666 <1.0 10.0 272 80.4 <1.0 25.0 252 66.6 <1.0 17.5 195 2.2 0.1 1.0 307 80.4 34.0 47.5
	00 195 337 00 150	0.0 195 33.7 0.0 15.0 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 15.0 15.0 15.0 15.0 15.0 1	0.0 195 33.7 0.0 15.0 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 195 33.7 0.0 15.0 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0	195 33.7 0.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0	195 33.7 0.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0	195     33.7     0.0     15.0       195     33.7     0.0     15.0       195     33.7     0.0     15.0       232     66.6     <1.0
	0.0 195 33.7 0.0 15.0	00 195 33.7 00 15.0 00 195 33.7 00 15.0 00 195 33.7 00 15.0	0.0 195 33.7 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 15.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 0.0 195 33.7 0.0 15.0 <1.0 232 666 <1.0 10.0 <1.0 272 80.4 <1.0 25.0	195   33.7   0.0   15	195   33.7   0.0   15.0   19.5   19	195   33.7   0.0   15.0   19.5   19
155     35.7     0.0     15.0       195     33.7     0.0     15.0       222     66.6     <1.0	232     66.6     <1.0	232     666     <10	252 66.6 <1.0 17.5 17.5 17.5 2.2 0.1 1.0 2.3 80.4 34.0 47.5 24.3 45.5 6.1 7.7	195 2.2 0.1 1.0 397 80.4 34.0 47.5 243 45.5 6.1 7.7	0.1 195 2.2 0.1 1.0 49,0 307 80,4 34,0 47,5 7.2 243 45,5 6.1 7.7	7.2 243 45.5 6.1 7.7	

Quality parameters are reported as mg/) unless otherwise noted.
 Data: Database input restricted to values greater then laboratory minimum detection limit.

TABLE 17: MILL FORK CANYON WATER QUALITY \* MFA1 - ABOVE MINE

TDS			47	247	47		62	264	63		9/	710	91	20
TSS T				13 2				19.0					53.90 3	18 2
SULFATE 1				15				26.0 19				223 3		20
SODIUM			4	4	4	:	5.00	5.00	5.00	;	90.	24.00	11.20	70
							1.00	1.00	1.00	;	00.	3.00	2.00	17
PH (units) POTASSIUM			œ	∞	<b>∞</b>		8.37	8.45	8.41	;	8.00	8.45	8.11	21
OIL & GREASE P														
MANGANESE														
MAGNESTUM			21	21	21	,	21.00	26.00	23.50	:	==	73	42.30	20
IRON DISSOLVED										!	0.48	0.50	0.49	2
IRON TOTAL											90.0	3.03	0.71	15
HARDNESS			219	219	219		239	242	240.5	į	208	462	316	20
CONDUCTIVITY (smbos/cm)			451	451	451		444	455	449.5	į	081	813	536	20
CHLORIDE							2.0	3.0	2.5		2.0	24.0	11.6	19
CALCIUM CARBONATE											6.5	8.0	8.0	2
CALCIUM			53	53	53		54.0	0.19	57.5		32.0	82.0	57.0	70
ACIDITY BICARBONATE NO FLOW DURING 2001		NO FLOW DURING 2000	275	275	275		285	301	293		153	400	291	61
ACIBITY NO FLOW I		NO FLOW I								1986-2000				
2001** SAMPLE DATES	2009*** MIN MAX MEAN	No. of Analysis 2000**	MIN	MAX	MEAN	1998**	MIN	MAX	MEAN	HISTORICAL 1986-200	MIN	MAX	MEAN	No. of Analysis

<sup>\*</sup> Qualky parameters are reported as mg/l unkss otherwise noted. \*\* Data: Database imput restricted to values greater then laboratory minimum detection limit.

TABLE 18: MILL FORK CANYON WATER QUALITY \* MFB2 - BELOW MINE

CONDUCTIVITY IRON IRON (umbos/cm) HARDNESS TOTAL DISSOLVED	763 330				763 340					241	608 312 0.40	277			379	605.5 322.75 0.30		0.05	416 0.97	307 0.32	27 26 15 5	
COLCIUM CARBONATE CHLORIDE (	8 11.1	7 14.4	;		8 14					7 2		9 4				18.5 7.8			19.0 17.0		6 26	
ALKALINITY ACIDITY BICARBONATE CALCIUM	338 58	318 52			338 58			NO FLOW DURING 2000			328 57				350 66.0	333 60.0	86-2000		412 76.0		25 25	
2001** SAMPLE DATES	20010627	20010913	2001**	ZIW	MAX	MEAN	No. of Analysis		1999**	MIN	MAX	MEAN	1998**	MIN	MAX	MEAN	<b>HISTORICAL 1986-2000</b>	MIN	MAX	MEAN	No. of Analysis	

Quality parameters are reported as mg/l unless otherwise noted.
 Data: Database input restricted to values greater thea laboratory minimum detection limit.

TABLE 19: RILDA CANYON SURFACE WATER QUALITY \* RCFI - RILDA CANYON FLUME - RIGHT FORK

	244 244 261 261 253 252 252 245 245 269	\$ 4 4 5 \$ 2 8 5 6 7 8 8 5	٥	2		223	2					8.55			·	
<u>.</u>	244 261 253 252 252 252 245 245 269	46 52 52		2.2	508 468	205			19 22			8.62			, o	5 15 9 26
_	244 261 253 252 252 252 245 245 269	46 58 52														
_	253 252 252 252 252 245 269 269	22	9	7 6	468	205	0.10		61 %			8.55			Ś	
_	2 252 252 252 252 245 269		9 9	7 7	488 88	214	0.10		7 7			8.59 8.59			۷ ۲	, 26 7 21
	252 252 252 245 269 257	·	-	·	,	,	-	-	,	-	-	,			,	,
	252 252 252 245 269 257	1	-	1	1	1	-	-	1	-	-	4	-		4	
	252 252 245 269 257	53		2	420	223			22			∞			9	
	252 245 269 257	53		7	420	223			22			∞			9	6 20
	245 269 257	23		7	420	223			22			•			9	
	269 257	27	9	-	437	241	0.40		24			œ	-		v	
	257	63	6	7	449	256	0.40		24			0			23	23 24
		09	∞	7	443	249	0.40		24			6	_		15	
	237	55.0	15.0	3.0	447	227	0.10		21.00			8.25	1.00		2.00	
	247	62.0	26.0	3.0	464	241	0.70		22.00			8.56	0. 1. 1.		2.00	
	242	58.5	20.5	3.0	455.5	234	0.40		21.50			8.41	1.00		9.00	6.00 20.0
	3,46	63.0	•	0,5	007	700	-					9			ç	
	275	56.0	2.0	0.4	465	224	2 9		00.00			6.39	8.5		0.6	
	271	54.0	0.9	9. S.	442.5	213	01		00.61			. 8 43	8 8		0.0	60 23.0
												!				
	240	8 8	2 :	4:	423	235			12.5			6			\$ (	
	243	8 5	<u> </u>	= «	431	246			3 8			<b>.</b> .			<i>ک</i> د	
		;		ì	į ·	2	•		ì				•		-	•
	245	09	10	4	384	270	7	0	21	0	2	<b>∞</b>	-		9	
	260	83	20	\$	423	290	3	-	30	0	2	6	7		74	24 47
1994	253	72	15	\$	404	280	7	_	56	0	\$	<b>∞</b>	7		15	
O O I	239	48.0	0	0	378	202	020	02.0	00.00	91	•	6 73	5		9	
	239	48.0	0.1	0.1	378	707 707	0.20	0.20	20.00	0.10	5.0	8.73	9.4		800	8.00
MEAN 10.0	239	48.0	1.0	0.1	378	202	0.20	0.20	20.00	0.10	5.0	8.73	4.00		8.00	
	į	;	;													
MIN 0.0	254	54.0	0.0	2.5	399	238	0.05	0.07	19.20	0.03	0.0	8.69	0.10		4.90	
	272	03.0 888	0.5	3.7	516 577	244 244	7.0	0.23	23.60	50.0	0 0	66.8	00.00	_ ~	12.00	2.00 23.0
			<u>}</u>	i	3	:	3	2		8	2	5	9		P	
	262	63.9	0.1	15.0	371	255	0.07	0.11	23.10	0.14	0.7	8.90	0.00		6.30	
MAX 0.1	262	63.9	0.1	15.0	371	255	0.07	0.11	23.10	0.14	0.7	8.90	0.00		6.30	
	707	63.9	1.0	13.0	1/6	667	0.0	0.11	23.10	0.14	) O	8.90	0.00		6.30	6.30 17.0
MIN <1.0	244	58.2	<1.0	15.0	300	225	<0.02	<0.02	19.40	<0.02	1.5	8.20	0.12		3 78	3.78 7.0
	329	9'801	<1.0	15.5	350	384	60.0	1:13	27.40	0.04	61	8.40	1.78		7.48	
MEAN <1.0	287	83.4	<1.0	15.3	325	305	90.0	0.58	23.40	0.03	1.7	8.30	0.95		5.63	
CAL 198	;															
MIN 0.1	722	48.0	0.1	0.7	300	201	0.02	0.02	18.00	10:0	0.7	7.78	0.01		3.78	
	329	62.7	7.0	15.0	482	384	05.5	07.0	30.00	0.14	5.0	× 6	00.00		24.00	24.00 80.0
No. of		7.70	Ċ.	1.0	2	647	ţ	0.20	<b>4</b> / .77	8.5	7.7	24.0	8.181		6.45	
Analysis 8	19	16	81	16	61	19	4	6	19	6	∞	16	15		61	81

Quality parameters are reported as myl unless otherwise noted.
 Data Database input restricted to values greater then laboratory minimum detection limit.

RCF3 - RILDA CANYON FLUME - ABOVE NEWUA SPRINGS TABLE 20: RILDA CANYON SURFACE WATER QUALITY \*

20010913 423 88  20011213 431 92  MAX  MAX  MEAN  MIN  MIN  MIN  MIN  MIN  MIN  MIN  M	CALCTUM CARBONATE	CHLORIDE	(umhos/cm) 564	OXYGEN	HARDNESS 244	إد	DISSOLVED	MAGNESIUM MANGANESE		GREASE	PH (units)	-1	POTASSIUM	S	- 1
431 287 431 380 380 418 418 418 367 276 438 371 276 438 371 276 406 406 340 340 375 406 340 375 376 377 378 379 370 370 371 371 372 373 373 374 475 475 475 476 476 476 476 476 476 476 476	. 88	, 6	800	11	430	. 0		3 5				8.19		٦٠	3 22
287 431 380 1380 281 418 418 371 377 377 377 377 378 375 475 375 475 375 376 377 377 375 376 377 377 377 377 377 378 378 378 378 378	92	· œ	904	. 6	456	-		. \$5			7	26	97 3		m
287 380 381 380 381 411 418 367 418 367 371 371 371 372 373 375 375 376 476 476 476 476 477 377 377 377 377 377 377 377 377 377															
3 431 438 438 438 438 438 439 439 439 439 439 439 439 439 439 439	55	Э	564	6	244	0		26			7.9	7			-
3 3 40 412 422 383 385 375 375 375 375 375 375 375 375 375 37	92 78	6 r	908 792	= =	377	<del>-</del> -		S 4			8.19		e 6	e 2	3 23
3 418 418 367 418 367 375 375 375 375 375 375 377 377 377 37			!	:									1		
281 418 418 57 57 57 57 57 57 57 57 57 57 57 57 57	3 3	ю	33	3	Э	3	Е	ю	ю	3	6		ю	3 3	
418 276 438 371 257 380 316 270 270 270 343 343 341 341 342 342 343 344 345 347 347 348 349 341 341 341 342 343 343 343 343 344 343 344 345 347 347 348 349 349 349 349 349 349 349 349 349 349	99	3	200	10	251	0		27			7.88		7		
367 276 438 371 375 375 375 375 375 375 377 377 377 377	87	∞	882	=	431	0		25			8.17		m		24
276 438 371 257 380 316 270 290 270 270 270 270 270 270 270 270 270 27	76	9	740	01	370	0		4			8.07		e	3 18	
4.78 4.38 3.71 3.71 3.75 3.75 3.75 3.75 3.75 3.75 3.75 3.75		ć	9		Š	c		8			ò		ć		
3.55 3.80 3.80 3.80 3.07 3.07 3.07 3.07 3.07 3.07 3.07 3.0	7 7	۷ 0	858	o 04	435	> -		3 8			0.0		7 6		0 2
257 380 316 316 273 273 274 406 406 406 406 347 375 375 401 375 375 376 377 377 378 379 370 370 370 370 370 370 370 370 370 370	76 7	\ <b>\</b> 0	902	,	362	- 0		45			8.26		'n	3 5	
257 380 316 307 273 307 274 406 406 415 415 415 417 417 417 417 417 317 317 317 317 317 317 317 317 317 3															
380 316 273 307 290 307 307 316 316 317 318 317 317 317 317 317 317 317 317 317 317		2.0	477	4.40	250	0.20		23.00			8.00		1.00	1.00 6.00	
316 273 307 279 244 406 415 375 375 375 377 377 377 377 377 377 37		0.9	692	09.9	370	1.40		42.00			8.32		2.00		15.00
273 307 290 244 406 401 415 375 375 401 388 412 422 412 375 375 375 375 375 375 375 375 375 375	66.7 28.0	4.0	563	5.67	294	09.0		31.00			8.20		1.33		
367. 290. 290. 290. 343. 343. 340. 340. 340. 340. 340. 34	8 8	4	468	08.9	246	0.30		42			8 13		,		v
290 244 406 406 343 340 340 340 340 340 340 340 340 340		·v	527	06.9	255	1.90		25			8.34		1 71	9 6	
244 406 343 340 375 375 375 375 377 377 377 377 377 378 378 377 378 378	8 09	5	498	09.9	251	1.10		25			8.24		2		00
404 404 343 343 340 340 340 340 340 340	21	v	77	۲	- 00	c		5			0		-		•
343 343 375 375 377 377 377 377 377 377 378 377 378 377 378 377 378 378		n <u>5</u>	777	- 2	107	۰ د		ŧ [			0 0		- ر		2 0
270 415 335 375 401 388 242 242 377 375 377 375 376 376 376 377 376 377 377 377 377 377		<u>t</u> 6	647	2 9	351	<b>1</b> –		÷ 4			<b>~</b> ∞		4 64	2 11	
270 415 335 375 401 375 242 375 375 376 377 377 377 377 377 377 377 377 377			:		į	,		;						,	
335 375 401 388 242 412 327 327 340 340 340 365		4	443	so I	279	0	0	52	0	S.	œ ·		-		7
335 401 388 401 327 327 327 340 423 340 422 362 500 365	50	<b>00</b> \	710	,	400	e .	0 (	47	0 (	s,	∞ c		m (	3 :: 15	
375 401 388 242 412 278 453 375 340 422 382 242 500 365		9	264	٥	347	_	0	38	0	'n	<b>x</b> 0		7		=
401 388 242 412 377 375 340 422 382 500 500	72.0 1.0	4.0	631	6.5	335	0.20	0.20	37.00	0.10	5.0	7.86		2.00	2.00 11.00	
242 242 412 278 278 375 340 382 242 500 365		0.9	719	7.9	370	0.20	0.40	47.00	0.20	2.0	8.37		2.00		13.00
242 412 327 278 453 375 340 422 382 242 500 365	72.5	2.0	675	7.2	352	0.20	0.30	42.00	0.15	2.0	8.12		3.50	3.50 12.00	
412 278 278 453 375 340 422 382 242 500 365	0.0 2.19	4.0	437	6.7	265	0.05	0.20	23.30	0.03	1.0	8.34		0.20		11.20
327 278 453 375 340 422 382 242 500 365		5.0	674	7.7	381	0.08	0.31	47.00	0.10	1.2	8.83		2.00	2.00 16.00	
278 453 375 340 422 382 242 500 365	71.3 0.5	4.5	555	7.2	323	90.0	0.25	35.15	90:0	Ξ	8.59		1.10		13.60
453 453 375 340 422 382 382 500 500		•	Ì							,	ì				ć
375 340 422 382 382 242 500 365	97.6	10.0	4/6	0.0	708	0.01	0.00	29.90 48.60	0.0	4	8.16		10:01	1.60	
340 422 382 242 500 365		13.3	634	7.9	370	0.10	61.0	41.37	90'0	0.7	8.33		0.92		13.86
340 422 382 242 500 365		;	;	į	:	;	. :	;			;				:
422 382 242 500 365		15.0	380	1.7	365	0.01	<0.02	25.00	00.0	0.7	7.50		0.23		
242 500 365	91.7 0.8	31.3	620 525	0.0	40. 40.	9.14	0.78	49.80	0.10	3.6 2.5	8.30 7.90		1.65	1.65 11.40	14.50
242 500 365		)	ì	;	:		) ;		5	ì			}		2
38.0 500 7.7 365	56.0 0.1	2.0	380	4.4	246	0.02	0.01	23.30	0.01	0.4	7.50		0.01		5.40
		50.0 10.2	855 631	13.2	374	3.00 54	0.41	53.20 40.30	0.20	5.0	8.83		2.00	5.00 24.00	
							;			i	!				! !
Analysis 24 39 39	39 26	39	40	40	36	35	21	39	21	23	40	(Č	36	6 39	

<sup>\*</sup> Quality parameters are reported as mg/l unless otherwise noted. \*\* Data: Database input restricted to values greater then laboratory minimum detection limit.

TABLE 21: RILDA CANYON SURFACE WATER QUALITY \* RCW4 - RILDA CANYON FLUME - NEAR HIGHWAY 31

11	- 1	ACIDITY B	ALKALINITY ACIDITY BICARBONATE		CALCIUM CARBONATE CHI	CHLORIDE	COND	DISSOLVED	HARDNESS	IRON TOTAL	IRON DISSOLVED	MAGNESIUM MANGANESE	MANGANESE	OIL & GREASE	PH (units)	PH (units) POTASSIUM SODIUM		SULFATE	SZ	
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	20010314		777	2 5		<u>.</u>		8.20	4/0			3 :			8.23	m (	7.7	<u>8</u> ;	,	
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	20010629		311	62		<b>o</b> o (			307	0.20		37			8.32	7	15	24	11	
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	20010913		379	2		91		10.90	422			22			8.47		52	168		
1	20011213		426	82		91		11.80	476			2			8.32	3	25	173		
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	1007		;	•		i	i	6	101			Č			į				1	
1, 10, 10, 10, 10, 10, 10, 10, 10, 10,	MIN		116	0.70		4.6	47/	07.8	) i	0.20		37.00			57.8	2.00	9.6	0.76	0.71	
1.5   1.5	MEAN		382	76.3		14.8 0.81	90.7 90.7	10.30	4 4 6 4	0.20		55.50 55.50			8.47	3.00 2.75	23.00	156.8	17.0	
1.   1.   1.   1.   1.   1.   1.   1.																! i				
13.5   13.0	No. of Analysis	4	4	4	4	4	4		4	4	4	4	4	4	4	4	4	4	٩	
1, 10, 10, 10, 10, 10, 10, 10, 10, 10,	2000							•			•				•					
14.0   14.0	MIN		325	63.0		0.9	630	6.20	318	0.10		39.00			8.19	2.00	14.00	83.0	5.0	
11   12   13   14   15   15   15   15   15   15   15	MAX		420	76.0		16.0	907	14.00	415	0.10		29.00			8.32	3.00	26.00	157.0	7.0	
14   14   15   15   15   15   15   15	MEAN		382	69.3		12.0	802	10.50	387	0.10		52.00			8.24	2.50	22.25	130.0	0.9	
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	••6661																			
140   150   150   150   140   140   150	MIN		312	0.19	7.0	2.0	475	5.60	255	130		25.00			8.43	2.00	2.00	26.0	2.0	
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	MAX		416	0.4.0	0.6	0.06	<b>20</b>	06.9	114	1.30		55.00			8.65	3.00	22.00	117.0	20.0	
14   150   150   160	MEA!		308	0.00	0.0	34.7	790	0.43	74.	2		43.00			8.51	7.30	14.0/	84.0	671	
Harrow   H	NIM		209	62.0	16.0	4.0	206	6.50	254	010		24 00			777	2.00	2 00	25.0	18.0	
14   255   64   7   16   668   7   7   6   7   7   7   7   7   7   7	MAX		434	79.0	51.0	0	108	030	420	08 1		24.0			. 4	2 6	2000	6	306.0	
442         646         7         44         849         870         357         20         34         30 <th< td=""><th>MEAN</th><td></td><td>330</td><td>67.3</td><td>30.0</td><td>7.8</td><td>668.25</td><td>7.68</td><td>341</td><td>0.95</td><td></td><td>42.00</td><td></td><td></td><td>10.8</td><td>2.67</td><td>15.50</td><td>70.3</td><td>162.0</td><td></td></th<>	MEAN		330	67.3	30.0	7.8	668.25	7.68	341	0.95		42.00			10.8	2.67	15.50	70.3	162.0	
14   15   15   15   15   15   15   15	1997**															i				
412         648         7         48         845         870         345         210         54         20         836         3         210         42         20         836         3         210         42         20         836         3         21         42         20         836         3         22         42         20         836         3         24         42	MIIN		292	59	7	\$	507	6.10	267	0.40		29		2.0	7.80	-	6	15	34	
356         644         7         18         654         750         333         1.25         42         20         <	MAX		432	89	7	48	845	8.70	385	2.10		54		2.0	8.36	ъ	77	601	129	
14         253         65         11         5         478         9         301         2         38         7         88         1         7           14         428         75         18         15         413         15         419         2         38         3         1         4         1         1         41         15         419         2         38         3         4         1         1         428         7         8         1         9         3         4         9         3         4         9         3         4         9         3         6         6         3         6         6         3         6         6         3         6         6         3         6         3         6         3         6         3         6         3         4 <t< td=""><th>MEAN</th><td></td><td>376</td><td>2</td><td>7</td><td><u>ee</u></td><td>694</td><td>7.50</td><td>333</td><td>1.25</td><td></td><td>42</td><td></td><td>2.0</td><td>8.20</td><td>7</td><td>91</td><td>28</td><td>87</td><td></td></t<>	MEAN		376	2	7	<u>ee</u>	694	7.50	333	1.25		42		2.0	8.20	7	91	28	87	
14   528   75   18   15   813   15   419   2   5   5   6   18   15   15   419   2   5   5   5   6   18   15   15   11   11   11   11   11	NIN NIN	14	263	69	=	v	478	•	301	·		7.			o	-	7	0,		
14   369   73   14   11   720   11   383   2   5   6   58   6   7   6   6   6   6   6   6   6   6	MAX	: 7	478	2	: =	, <u>~</u>	813	, <u>~</u>	419	۱,		î 8				- (*	, 70	13	2	
10   10   420	MEAN	. 4	369	5 12	5 4	: =	720	: =	385	1 7		8 8			\ <b>o</b> c	5	5 2	83	<u></u>	
10   310   65   5   5   476   4   352   0   0   29   0   5   8   1   8   8   1   1   1   1   1   1	5661															ı				
10   420   100   20   13   822   7   444   4   0   58   9   5   5   5   5   5   5   5   5   5	MIN	0	310	65	5	5	476	4	352	0	0	53	0	\$	∞	-	00	70	2	
10   355   80   13   11   655   6   384   1   0   45   0   5   8   2   19     10   416   750   10   100   831   750   440   0.20   0.20   6100   0.20   50   8.51   2.00   2.00     10   424   755   1.0   100   835   7.1   431   0.20   0.20   6100   0.20   50   8.51   2.00   2.00     10   424   755   1.0   100   835   7.1   431   0.20   0.20   6100   0.10   50   8.54   3.50   2.200     10   424   755   1.0   100   835   7.1   431   0.20   0.20   6100   0.10   50   8.54   3.50   2.200     10   434   750   1.0   140   707   75   431   0.05   0.20   0.10   0.10   50   8.75   0.20   0.200     10   435   740   0.1   100   785   7.1   431   0.05   0.45   4.52   0.05   0.10   1.0   1.0     10   437   830   0.1   10.0   7.9   7.9   7.9   7.9   7.9     10   430   7.2   0.0   1.3   6.5   8.2   3.8   0.10   0.14   4.6   0.03   0.01   1.0   0.1   1.0     10   417   1170   4.10   4.5   4.0   6.9   3.8   0.0   0.0   3.6   0.0   0.1   1.0   0.0     10   417   1170   4.10   4.5   4.0   6.9   3.8   0.0   0.0   3.6   0.0   0.0   0.0   0.0     10   417   1170   4.10   4.2   6.0   4.2   6.0   0.1   0.1   0.1   0.0   0.0     10   417   1170   4.10   4.2   6.0	MAX	01	420	<u>8</u>	70	13	802	7	424	4	0	28	0	٠	6	3	76	110	290	
100   416   750   10   100   831   680   472   020   020   57700   010   5.0   8.51   2.00   9.00   100   4.24   7.55   1.0   10.0   840   7.50   440   0.20   0.20   61.00   0.20   5.0   8.54   5.00   2.0.50   10.0   10.0   8.45   7.1   4.11   0.20   0.20   61.00   0.10   5.0   8.54   5.00   2.0.50   10.0   0.0   0.10   5.0   8.54   5.0   2.0.50   10.0   0.0   0.10   0.10   5.0   8.54   5.0   2.0.50   0.0   0.10   0.	MEAN	<u></u>	355	80	13	=	655	9	384	-	0	45	0	~	∞	7	19	75	80	
100   416   750   10   100   831   680   422   020   020   61,00   010   50   8.51   200   9.00   100   418   750   440   020   020   61,00   020   61,00   020   61,00   020   61,00   020	1994																			
100   432   760   1.0   100   840   7.50   440   0.20   0.20   61.00   0.20   5.0   8.54   5.0   2.00   2.00   1.0   1.0   1.0   8.5   7.1   4.1   0.20   0.20   0.20   0.10   5.0   8.54   3.50   2.50   2.50   1.0	MIN	0.01	416	75.0	1.0	10.0	831	9.80	422	0.20	0.20	57.00	0.10	5.0	8.51	5.00	9.00	130.0	4.0	
100   424   755   10   100   835   71   431   020   020   59.00   010   50   854   350   20	MAX	10.0	432	76.0	1.0	10.0	840	7.50	440	0.20	0.20	61.00	0.20	5.0	8.57	5.00	22.00	140.0	9.0	
0.0         317         690         0.0         48         486         55         290         0.05         0.20         28.50         0.03         0.7         862         0.00         790           0.0         403         790         1.0         140         707         7.5         453         0.06         0.71         62.00         0.10         1.0         873         1000         20.00           0.0         403         790         1.0         140         707         7.5         453         0.66         0.71         62.00         0.10         1.0         873         1000         20.00           0.1         360         429         830         0.1         0.1         448         0.28         0.4         45.0         0.01         1.9         800         1.15         11.5         11	MEAN	10.0	424	75.5	1.0	10.0	835	7.1	431	0.20	0.20	89.00	0.10	9.0	8.54	3.50	20.50	135.0	6.5	
11   11   12   13   13   13   14   15   15   15   15   15   15   15	S 2	0	317	0 09	ć	•	787	9 9	9	90 0	6	9	6	t	;	6	5	1		
0.0 360 740 0.5 94 556 65 371 0.05 045 45.25 0.06 0.8 8.67 5.10 13.90  0.1 374 770 0.1 10.0 585 5.9 338 0.01 0.01 35.30 0.01 0.1 8.60 0.01 11.50  1.0 429 83.0 0.1 20.0 719 10.1 448 0.28 0.40 58.50 0.04 1.9 8.60 7.69 23.10  1.0 429 83.0 0.1 13.3 665 8.2 383 0.10 0.14 44.60 0.03 0.9 8.80 2.57 15.90  1.0 238 727 0.0 13.5 400 6.9 389 0.00 0.00 36.70 0.05 7.0 0.95 7.60  1.0 417 117.0 4.10 45.0 700 10.9 477 0.18 2.06 58.70 0.05 1.7 8.00 2.64 15.40  1.0 373 89.5 0.8 24.6 6.03 8.5 443 0.06 0.01 24.00 0.01 0.1 727 0.01 7.00  1.1 209 59.0 0.1 2.0 400 3.9 254 0.01 0.01 24.00 0.01 0.1 727 0.01 7.00  1.1 374 76.5 7.5 32.2 6.89 7.8 389 0.62 0.09 48.00 0.05 2.4 8.28 2.57 18.50  2.2 40 40 29 40 41 41 41 40 27 19 40 20 37 38 380 0.05 2.8 41 38 40	MAX	00	403	200	0 -	041	707	2.5	453	90.0	0.20	62.50	6.0	<u> </u>	70.0	000	00.00	0.70	9,0	
1.00   4.29   83.0   0.1   10.0   585   5.9   338   0.01   0.01   35.30   0.01   0.1   8.60   0.01   11.50     1.00   4.29   83.0   0.1   20.0   719   10.1   448   0.28   0.40   58.50   0.04   1.9   8.90   7.69   13.10     1.00   417   117.0   4.10   45.0   700   10.9   457   0.18   2.06   38.70   0.03   0.15   2.4   8.10   2.57   15.90     1.00   417   117.0   4.10   45.0   700   10.9   457   0.18   2.06   38.70   0.05   4.17   19.00     1.00   417   117.0   4.10   45.0   700   10.9   457   0.18   2.06   38.70   0.15   2.4   8.10   7.00     1.00   417   117.0   4.10   4.50   700   10.9   4.57   0.18   2.06   0.15   2.4   8.10   17.0     1.00   417   117.0   4.10   4.10   4.10   4.10   0.11   2.0   0.10   2.4   0.11   2.0   0.10   2.4   0.11   2.10   0.10   2.4   0.11   2.10   0.10   2.4   0.11   2.10   0.10   2.10   2.10   2.10   2.10   2.10     1.00   2.10   2.	MEAN	0.0	360	74.0	0.5	4.6	596	6.5	371	0.05	0.45	45.25	90.0	80	8.67	5.10	13.90	73.5	56.0	
01         374         770         01         100         585         59         338         0.01         0.01         35.30         0.01         0.1         8.60         0.01         1150           100         429         83.0         0.1         10.0         448         0.28         0.40         58.50         0.04         1.9         8.00         769         231           4.0         759         0.1         13.3         665         8.2         38         0.10         0.14         4460         0.03         9.9         750         759         231         15.9           4.0         4.0         4.0         1.3         4.0         6.9         389         0.0         0.0         4.0         750	1992																			
100   429   83,0   0.1   2.00   719   10.1   448   0.28   0.40   58,50   0.04   1.9   8.90   76.9   23.10     134   400   79.9   0.1   13.3   665   8.2   383   0.10   0.14   44.60   0.03   0.9   9.80   2.57   15.90     100   278   72.7   0.0   13.5   400   6.9   389   0.00   0.00   36.70   0.00   0.1   7.00   0.95   760     101   278   246   0.03   8.3   4.33   0.06   0.61   51.00   0.05   1.7   8.00   2.64   15.40     140   461   13.7   31.0   700.0   907   15.1   54.5   380   0.28   67.20   0.20   5.0   5.0   8.86   10.00   52.00     12   374   76.5   7.5   32.2   689   7.8   389   0.62   0.99   48.00   0.06   2.4   8.28   2.57   18.50     12   40   40   29   40   41   41   40   27   19   40   20   22   41   38   40     134   345	MIN	0.1	374	77.0	0.1	10.0	585	5.9	338	0.01	0.01	35.30	0.01	0.1	8.60	0.01	11.50	40.0	1.0	
10   208   727   0.0   135   0.0	MAX	10.0	429	83.0	I.o	20.0	917	10.1	448	0.28	0.40	58.50	0.04	6.6	8:30	7.69	23.10	150.0	49.0	
<1.0         2.88         7.27         0.0         13.5         400         6.9         389         0.00         0.00         36.70         0.00         <1.0         770         0.95         760           10.0         417         117.0         <1.0         45.0         700         10.9         457         0.18         2.06         58.70         0.15         2.4         8.30         471         1900           AL1882-1009         417         117.0         <1.0         45.0         0.01         51.00         0.05         1.7         8.00         2.64         13.0           AL1882-1009         50.0         50.0         400         3.9         254         0.01         0.10         2.0         0.0         2.4         0.17         8.00         2.64         13.0           14.0         45.1         13.2.7         51.0         400         3.9         254         0.01         20.0         0.01         2.7         0.01         7.00         2.00         2.00         2.0         0.00         2.0         0.00         2.0         0.00         2.0         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00	MEAN 1991	ŧ.	3	6.61	1.0	6.61	600	7.8	183	0.10	41.0	44.60	0.03	6:0	8.80	757	06.51	0.0		
10	MIN	<1.0	298	72.7	0.0	13.5	400	6.9	389	00.00	0.00	36.70	0.00	<1.0	7.70	0.95	7.60	40.0	1.0	
40         373         895         0.8         246         603         8.5         433         0.06         0.61         51.00         0.05         1.7         8.00         2.64         15.40           AL19823000         1         209         590         0.1         20         400         3.9         254         0.01         0.01         24.00         0.01         0.1         727         0.01         700           14.0         461         132.7         51.0         700.0         907         15.1         545         3.80         0.28         67.20         0.20         5.0         8.86         1000         52.00         3.7           7.1         374         76.5         7.5         3.2         689         7.8         389         0.62         0.09         48.00         0.06         2.4         8.28         2.57         18.50           22         40         40         29         40         41         41         40         27         19         40         20         22         41         38         40	MAX	10.0	417	117.0	<1.0	45.0	700	6'01	457	81.0	2.06	58.70	0.15	2.4	8.30	4.71	00.61	0.001	505.0	
ALL 1985-2009         590         61         2.0         400         3.9         254         0.01         0.01         24.00         0.01         0.1         7.27         0.01         7.00           1.0         1.0         20         40         0.28         67.20         0.20         5.0         8.86         10.00         52.00           7.1         374         76.5         7.5         32.2         689         7.8         389         0.62         0.09         48.00         0.06         2.4         8.28         2.57         18.50           22         40         41         41         40         27         19         40         20         22         41         38         40		4.0	373	89.5	8.0	24.6	603	8.5	433	90.0	0.61	51.00	0.05	1.7	8.00	2.64	15.40	80.0	131.0	
0.1 209 59,0 0.1 2.0 400 3.9 254 0.01 0.01 24.00 0.01 0.1 7.27 0.01 7.00 14.0 461 132.7 51.0 700.0 907 15.1 545 3.80 0.28 67.20 0.20 5.0 8.86 10.00 52.00 7.1 374 76.5 7.5 32.2 689 7.8 389 0.62 0.09 48.00 0.06 2.4 8.28 2.57 18.50 22 40 40 40 27 19 40 20 22 41 38 40	7	989-2000	;	;	,															
14.0 461 134.7 31.0 700.0 507 15.1 545 380 0.28 67.20 0.20 5.0 8.86 10.00 52.00 7.1 374 76.5 7.5 32.2 689 7.8 389 0.62 0.09 48.00 0.06 2.4 8.28 2.57 18.50 22 40 40 41 41 40 27 19 40 20 22 41 38 40	MIN	- - -	508	59.0	0.1	2.0	400	3.9	254	0.01	0.01	24 00	0.01	0.1	7.27	0.01	7.00	15.0	0.1	
22 40 40 29 40 41 41 40 27 19 40 20 22 41 38 40	MFAN	7.1	174	76.5	75	32.7	689	13.1	380	3.80	87.0	97.79	0.20	0.0	08.80	00:01	22.00	0.062	0.505 50.0	
22 40 40 29 40 41 41 40 27 19 40 20 22 41 38 40	No of	:			?	***	è	2	ì	70.0	6.6	8	3	*	07:0	16.7	10.00	4.10		
	Analysis	22	9	4	29	40	14	4	40	27	61	40	20	22	14	38	40	40	32	

Quality parameters are reported as mg/l unless otherwise noted.
 Data: Database input restricted to values greater then laboratory minimum detection limit.

# TABLE 22: COTTONWOOD CANYON CREEK WATER QUALITY \* $\overline{\text{SW-1}}$

11.2   1.1	SAMPLE DATES	ACIDITY	ALKALINITY BICARBONATE	CALCIUM	CARBONATE	CHLORIDE	CONDUCTIVITY (umbos/cm)	HABDNESS	IRON	IRON	MINISTRUCTURE	MANCANEGE	OIL &		MillSSATOd (stimi) Hd	Mildos	STAG IIIS	351	Tue
11.1   11.1	20010309		422	71		17	947	412				TOTALONIUM			7	77	126	14	473
316         65         143         89         360         48         48         26         27         27         87           4220         570         640         470         60         90         910         453         44         10         440           4220         170         640         4120         60         970         453         44         10         140         440           370         412         170         4420         4120         60         970         453         441         10         440           370         413         410         453         47         453         47         4         3         17         170         860           370         41         5         51         5         51         6         44         3         4         4         3         17         17         4         4         4         3         4         4         4         3         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4 </td <th>20010606</th> <td></td> <td>312</td> <td>57</td> <td></td> <td>7</td> <td>099</td> <td>270</td> <td></td> <td></td> <td>31</td> <td></td> <td></td> <td>8.24</td> <td>۰</td> <td>1 4</td> <td>4</td> <td></td> <td>299</td>	20010606		312	57		7	099	270			31			8.24	۰	1 4	4		299
312.0         57.0         7.0         666.0         270.0         0.0         31.0         4.0 <th< td=""><th>20010920</th><td></td><td>376</td><td>99</td><td></td><td>14.5</td><td>829</td><td>360</td><td></td><td></td><td>48</td><td></td><td></td><td>8.4</td><td>7</td><td>77</td><td>87.7</td><td>9</td><td>454</td></th<>	20010920		376	99		14.5	829	360			48			8.4	7	77	87.7	9	454
13.0         57.0         7.0         660.0         170.0         60.0         31.0         51.0         4.0         41.0 <th< td=""><th></th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>																			
472.0         170         970.0         470.0         970.0         470.0         970.0         470.0         970.0         470.0         970.0         470.0         970.0         470.0         970.0         470.0         970.0         470.0         970.0         470.0         970.0         470.0         970.0         470.0         970.0         470.0         970.0         470.0         9	2001		312.0	67.0		Ċ	0 0 2 2		Ġ		· ·				•			(	0
4220         710         170         9470         4120         600         570         870<	MIM		312.0	0.75		0.7	0.000		0.0		31.0			8.1	0:1	14.0	44.0	0.0	799.0
3100         643         12.8         821.0         347.3         #BIONOI         45.3         82.0         17.0         46.3         17.0         46.3         46.2         17.0         13.0         46.3         46.2         17.0         13.0         46.3         46.2         17.0         13.0         46.2         17.0         18.0         46.2         18.0         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2         18.0         46.2	MAX		422.0	71.0		17.0	947.0		0.0		57.0			8.4	5.0	27.0	126.0	14.0	473.0
39         41         4         3         4         4         4         4         4         3         3         3         3         3         3         3         3         4         4         4         4         4         4         3         3         3         3         3         3         3         3         4	MEAN		370.0	64.3		12.8	822.0		#DIA/0i		45.3			8.2	1.7	21.0	85.9	10.0	408.7
289         43         8         51         23         0         43         44         55         57         44         57         57         44         57         57         67         44         57         57         67         44         57         57         67         44         57         57         67         44         57         57         67         44         67         57         67         44         67         57         67         57         67         774         100         80         57         41         67         57         41         67         57         41         67         57         41         67         57         67         57         67         57         67         57         57         78         77         78         77         78         77         78         77         78         77         78	No. of	٧	. "	,,	•	'n	"	r	c	•	,	•	•	,	,	,	,	,	,
289         43         43         43         9         521         239         9         34	2000**	٠	n	1	•	n	n	n	>	+	ń	<b>†</b>	+	n	c	n	n	7	<b>n</b>
299         49         531         262         0         34         8         3         15         41           294         46         46         251         0         31         31         8         3         13         41           284         46         46         251         0         28         3         8         1         6         14         59           324         550         140         60         80         239         0.10         270         8         1         6         14         59           324         550         140         60         80         239         0.10         270         60         83         1         10         37           324         540         50         80         100         100         200         100	MIN		289	43		•	521	239	0		33			œ	۲۰	12	38	35	304
286         51         6         7         526         251         0         33         8         1         1         41           286         51         4         495         247         0         28         8         1         6         24           347         66         11         629         313         1         36         8         1         6         24           324         56         140         60         500         502         313         1         36         8         1         1         6         24           324         550         140         60         500 <th>MAX</th> <td></td> <td>299</td> <td>49</td> <td></td> <td>6</td> <td>531</td> <td>262</td> <td>0</td> <td></td> <td>34 5</td> <td></td> <td></td> <td>oc</td> <td>n</td> <td>3 5</td> <td>43</td> <td>2 5</td> <td>319</td>	MAX		299	49		6	531	262	0		34 5			oc	n	3 5	43	2 5	319
286         51         4         495         247         0         28         8         1         6         24           324         56         59         11         629         313         1         36         8         1         6         24           324         56         11         629         313         1         36         8         1         6         39           282         55         140         60         50         239         0.10         2700         60         8.14         100         80         33           324         640         140         90         562         30         100         50         30         120         40         60         8.14         100         80         10         30         30         60         8.14         130         10         40         10         60         8.14         130         10         40         10         60         8.14         130         10         40         10         60         8.14         130         10         10         10         10         10         10         10         10         10         10	MEAN		294	46		6	526	251	0		33			∞	'n	13	: 4	27	312
286         51         4         455         247         0         28         8         1         6         24           234         66         11         629         313         1         6         31         8         1         6         24           234         550         140         60         500         500         259         0.10         2700         60         8.8         1         10         30           324         640         140         90         562         300         100         2700         60         8.8         1         10         30           324         640         140         90         562         300         100         2700         60         8.8         1         10         37           310         54         54         12         46         54         1         40         8         1         100         41         1         9         54         1         20         8         1         1         9         1         20         8         1         1         9         1         40         1         40         1         40         1<	1999**																		
347         66         11         629         313         1         36         8         2         14         59           324         59         44         283         0         31         70         60         774         100         37           324         550         140         50         300         100         2700         60         8.34         100         800         620           324         640         140         90         562         300         100         2700         60         8.34         100         800         620           310         59.3         140         7.7         528         246         0         27         60         8.14         133         1000         440           314         54         5         2         2         246         0         27         8         2         11         50         8         2         11         50         8         2         11         50         8         2         10         40         8         1         10         40         1         40         8         1         10         40         10         1 </td <th>MIN</th> <td></td> <td>286</td> <td>51</td> <td></td> <td>4</td> <td>495</td> <td>247</td> <td>0</td> <td></td> <td>28</td> <td></td> <td></td> <td>∞</td> <td>-</td> <td>9</td> <td>24</td> <td>10</td> <td>271</td>	MIN		286	51		4	495	247	0		28			∞	-	9	24	10	271
282         55.0         14.0         6.0         50.0         259         0.10         27.00         6.0         8.74         1.0         8.0         33.0           324         64.0         14.0         6.0         50.0         259         0.10         27.00         6.0         8.3         2.00         12.00         620         33.0         14.0         6.0         8.4         1.00         8.0         33.0         14.0         6.0         8.3         2.00         12.00         6.0         8.4         1.00         8.0         6.0         8.0         4.0<	MAX		347	99		==	629	313	-		36			•	7	14	59	159	376
282         550         140         60         500         530         250         774         100         800         330           324         64.0         140         90         562         300         1,00         4400         60         8.38         2,00         12,00         62.0           310         59.3         140         7.7         528         274.67         0.63         30.67         60         8.38         2.00         12.00         62.0           346         58         5         22         58         246         0         27         8         1         9         32           346         58         5         22         281         1         29         8         2         11         9         32           346         58         5         22         281         1         29         8         2         11         9         32         1         49         8         2         11         8         2         11         49         3         3         8         2         11         3         10         49         49         8         2         11         3         <	MEAN		324	59		8	544	283	0		31			∞	1	10	37	19	309
282         550         140         60         500         259         040         2700         670         670         774         100         800         33.0           334         64.0         140         9.0         562         300         1.00         4400         6.0         8.14         1.00         8.00         33.0           314         55         14.0         7.7         58         24.6         0         27         7         8         1         9         32.0           346         58         5         16         546         257         1         29         8         2         1         9         32           346         58         2         257         1         29         8         2         1         9         32         1         8         2         1         42         1         42         1         42         1         42         8         2         10         42         1         42         1         42         1         8         2         1         8         2         1         42         1         43         1         42         1         1 <t< td=""><th>**8661</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	**8661																		
334         64.0         14.0         9.0         56.2         340         100         34.00         6.0         8.38         2.00         12.00         62.0           310         59.3         14.0         7.7         52.8         246         0.63         3.450         6.0         8.14         1.33         10.00         44.0           334         54         5         22         59.5         246         0         27         8         1         9         32           346         58         5         6         12         8         2         11         50         42           317         55         5         1         546         257         1         29         2         1         8         2         11         50         42           413         77         12         18         8         527         1         45	MIN		282	55.0	14.0	0.9	200	259	0.10		27.00		0.9	7.74	1.00	8.00	33.0	12.0	310
310         59.3         14.0         7.7         52.8         2746         0.63         30.67         6.0         8.14         1.33         10.00         44.0           304         54         5         8         5.22         595         281         1         33         8         2         11         9         32           346         58         5         22         595         281         1         33         8         2         11         9         32           346         58         5         22         595         281         1         29         2         11         9         32           288         63         12         9         537         293         0         36         8         2         10         42           413         77         12         18         822         435         1         49         8         2         1         8         2         10         8         2         1         8         2         10         8         1         1         10         9         1         1         1         1         1         1         1         8	MAX		324	64.0	14.0	9.0	562	300	1.00		34.00		0.9	8.38	2.00	12.00	62.0	130.0	330
344         54         5         8         52         24         6         7         7         33         8         2         11         9         32           346         58         5         22         595         281         1         33         8         2         11         50           317         55         5         16         546         257         1         29         1         12         10         42           288         63         12         18         822         425         1         56         8         2         10         42           413         77         12         18         822         425         1         49         5         8         2         1         10         42           290         6         15         15         8         502         300         0         0         28         0         5         8         1         11         25           395         81         20         27         961         520         2         0         5         8         2         2         4         10           31	MEAN		310	59.3	14.0	7.7	528	274.67	0.63		30.67		0.9	8.14	1.33	10.00	44.0	70.3	318
304         54         5         8         528         246         0         27         8         1         9         32           346         58         5         22         595         281         1         33         8         2         11         50           317         55         16         546         257         1         29         33         8         2         11         50           288         63         12         9         537         293         0         33         8         1         12         19         42           413         77         12         18         822         455         1         49         8         2         10         49           290         6         15         8         502         377         0         78         0         5         8         17         10           395         81         20         20         0         28         0         5         8         17         11         25           31         60         17         11         0         5         1         0         5         8	1997**																		
346         58         5         22         595         281         1         33         8         2         11         50           218         55         5         16         546         257         1         29         8         2         11         50           288         63         12         9         537         293         0         33         8         1         12         29           413         77         12         18         822         425         1         56         8         1         12         29           413         77         12         18         822         425         1         49         8         2         1         8         2         108           290         6         15         8         502         300         0         0         28         0         5         8         1         11         25           395         81         20         78         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7	MIN		304	54	5	<b>∞</b>	528	246	0		27			••	-	6	32	9	300
317         55         5         16         546         257         1         29         33         8         2         10         42           288         63         12         9         537         293         0         33         8         1         12         29           413         77         12         18         822         1         56         8         1         12         18           376         70         12         15         18         822         1         49         78         0         8         2         20         78           290         6         15         15         50         20         0         78         0         5         8         1         11         25           395         81         20         1         0         78         0         5         8         1         11         25           395         81         10         5         8         0         5         8         2         2         10           31         60         10         0         52         0         5         8         2	MAX		346	58	5	22	595	281	1		33			•	2	Ξ	20	78	300
288         63         12         9         537         293         0         33         8         1         12         29           413         77         12         18         822         425         1         56         8         1         11         23         108           376         70         12         18         502         370         0         0         28         0         5         8         1         11         25           395         81         20         27         961         520         2         0         78         0         5         8         3         38         170           352         54         18         17         721         405         1         0         5         8         3         3         38         170         38         1 </th <th>MEAN</th> <th></th> <th>317</th> <th>55</th> <th>٧.</th> <th>16</th> <th>546</th> <th>257</th> <th>-</th> <th></th> <th>29</th> <th></th> <th></th> <th>∞</th> <th>2</th> <th>10</th> <th>42</th> <th>43</th> <th>300</th>	MEAN		317	55	٧.	16	546	257	-		29			∞	2	10	42	43	300
288         63         12         9         537         293         0         33         8         1         12         29           413         77         12         18         822         425         1         56         8         1         12         29           413         77         12         18         822         425         1         6         8         2         2         2         108           290         6         15         8         502         300         0         0         28         0         5         8         1         11         25           395         81         20         27         961         520         0         78         0         5         8         170         38         170           352         54         18         17         721         405         1         0         5         8         2         2         4         95           352         54         18         17         3800         210.0         0         24         0         5         8         2         2         4         95           43	19961																		
413         77         12         18         822         425         1         56         8         2         23         108           376         70         12         15         729         377         0         0         28         0         5         8         1         11         25         78         170         78         1         11         25         20         78         170         38         170         38         170         38         170         38         170         38         170         38         170         38         170         38         170         38         170         38         170         38         170         38         170         38         170         38         170         38         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4	MIN	14	288	63	12	6	537	293	0		33			∞	-	12	53	36	308
376         70         12         15         729         377         0         49         8         2         20         78           290         6         15         8         502         300         0         0         28         0         5         8         1         11         25           395         81         20         27         961         520         0         78         0         5         8         1         11         25           352         54         18         17         405         1         0         52         0         5         8         2         2         0         70           352         54         18         17         721         405         1         0         52         0         5         8         2         2         4         95           231         6.0         1.0         6.0         52         0         5         8         2         2         4         95           231         6.0         1.0         6.0         52         0         6         5         8         2         2         4         1	MAX	27	413	77	12	81	822	425	-		99			••	2	23	108	36	518
290         6         15         8         502         300         0         0         28         0         5         8         1         11         25           395         81         20         27         961         520         2         0         78         0         5         8         3         38         170           352         54         18         17         70         5         1         6         5         8         3         38         170           231         60         10         0.7         380.0         210.0         60.2         0.1         6	MEAN	21	376	90	12	15	729	377	0		49			∞	2	20	78	36	446
290     6     15     8     50     300     0     28     0     5     8     1     11     25       395     81     20     27     961     520     2     0     78     0     5     8     3     38     170       352     54     18     17     721     405     1     0     5     8     2     2     4     95       231     6.0     1.0     0.7     380.0     210.0     0.02     0.1     2.4     0.0     0.5     7.1     1.0     6.0     20.0       433     152.3     20.0     27.0     961.0     520.0     15.9     0.4     78     1.3     358.0     8.7     21.0     60.0     238.7       336     65.7     5.6     12.4     644.1     326.0     0.9     0.1     78     74     41     77     78       78     77     78     74     41     73     74     77     78	1995	•		•	;	,	;	į											
235     61     20     21     360     170     38     3     38     170       335     54     18     17     721     405     1     0     52     0     5     8     3     38     170       231     6.0     1.0     0.7     380.0     210.0     0.02     0.1     2.4     0.0     0.5     7.1     1.0     6.0     20.0       433     152.3     20.0     27.0     961.0     520.0     15.9     0.4     78     1.3     358.0     8.7     21.0     60.0     238.7       336     65.7     5.6     12.4     644.1     326.0     0.9     0.1     11.1     7.9     3.0     20.0     70.9       78     77     78     74     41     73     74     77     78	WIN	2 5	067 206	5 م	5 6	∞ ;	502	300	0 (	0 (	28	0 "	د	<b>∞</b>		= :	52	ر م	280
231 6.0 1.0 0.7 380.0 210.0 0.02 0.1 2.4 0.0 0.5 7.1 1.0 6.0 20.0 4.3 152.3 20.0 27.0 961.0 520.0 15.9 0.4 78.0 1.3 358.0 8.7 21.0 60.0 238.7 336 65.7 5.6 12.4 644.1 326.0 0.9 0.1 38.0 0.1 11.1 7.9 3.0 20.0 70.9 78 77 78 78 77 78 78 77 78	MAX	2 2	353	91	07	/7	- F	520	7	0 (	8/	0	ر د	<b>&gt;</b> 0	m ·	38	170	105	069
231     6.0     1.0     0.7     380.0     210.0     0.02     0.1     2.4     0.0     0.5     7.1     1.0     6.0     20.0       433     152.3     20.0     27.0     961.0     520.0     15.9     0.4     78.0     1.3     358.0     8.7     21.0     60.0     238.7       336     65.7     5.6     12.4     644.1     326.0     0.9     0.1     11.1     7.9     3.0     20.0     70.9       78     77     19     78     74     41     73     74     77     78	MEAN	2	332	<b>5</b>	18	<b>)</b>	17/	405	•••	<b>-</b>	75	<b>5</b>	n	×	7	24	8	84	467
231         6.0         1.0         0.7         380.0         210.0         0.02         0.1         2.4         0.0         0.5         7.1         1.0         6.0         20.0           433         152.3         20.0         27.0         961.0         520.0         15.9         0.4         78.0         1.3         358.0         8.7         21.0         60.0         238.7           336         65.7         5.6         12.4         644.1         326.0         0.9         0.1         38.0         0.1         11.1         7.9         3.0         20.0         70.9           78         77         78         74         41         73         74         77         78	· · · · · · · · · · · · · · · · · · ·	2004																	
27.0 433 152.3 20.0 27.0 961.0 520.0 15.9 0.4 78.0 1.3 358.0 8.7 21.0 60.0 238.7 5.8 336 65.7 5.6 12.4 644.1 326.0 0.9 0.1 38.0 0.1 11.1 7.9 3.0 20.0 70.9 44 78 77 19 78 39 45 73 18 78 54 41 73 74 77 78	MINIORICAL	1 0	231	0.9	0.	7.0	380.0	0.010	000	-	,	c c	4		-	0.7	ć	4	י אננ
27.0 455 152.5 20.0 27.0 501.0 520.0 15.9 0.4 78.0 1.3 538.0 8.7 21.0 60.0 238.7 5.8 336 65.7 5.6 12.4 644.1 326.0 0.9 0.1 38.0 0.1 11.1 7.9 3.0 20.0 70.9 70.9 71 78 78 77 78 54 41 73 74 77 78	,	5.5	127	5.51	0.5	; ;	280.0	230.0	20.0		4.7	0.0	0.0	I.,	0.1	0.0	20.0	C.0	0.022
5.0 5.0 05.7 5.0 12.4 044.1 5.20.0 0.7 0.1 58.0 0.1 11.1 7.9 5.0 20.0 70.9 71 44 78 77 19 78 54 41 73 74 77 78	MAX	0.72	433	5.2.3	20.0	0.72	961.0	520.0	6.5	4.0	78.0	E :	358.0	×	21.0 3.8	0.09	238.7	1298.0	0.069
44 78 77 19 78 39 45 73 18 78 54 41 73 74 77 78	No. of	0.0	066	7.00	0.0	4.71	044.1	320.0	6.9	1.0	38.0		=	ς: /	3.0	0.02	6.0/	6.17	3/2.2
	Analysis	44	78	11	19	78	39	45	73	18	78	54	41	73	74	11	78	71	78

Quality parameters are reported as mg/l unless otherwise noted.
 Data. Database input restricted to values greater then laboratory minimum detection limit.

TABLE 23: COTTONWOOD CANYON CREEK WATER QUALITY \*  $\overline{\text{SW-2}}$ 

2001																		
SAMPLE	ACIDITY	ALKALINITY BICARBONATE	CALCIUM	CARBONATE	CHLORIDE	CONDUCTIVITY (umhos/cm)	HARDNESS	IRON	IRON DISSOLVED	MAGNESIUM MANGANESE	MANGANESE	OIL & GREASE	PH (units)	PH (units) POTASSIUM	SODIUM	SULFATE	SSI	TDS
20010309		521	51	80	84	9601	312	10.6		45	0.3		8.5	4	173	116	788	636
20010606		305	53	7	∞	709	285	0.3		37			7.14	_	17	44	91	319
20010920	_	349	9/		29.7	1236	490			73			8.53	· ••	47	251.7		724
20011213		378	81		24.9	1031	495			11			8.34	9	43	250.7	7	663
2001**																		
MIN		305	51	7	∞	709	285	0.30		37			7	-	17	44	7	319
MAX		521	81	∞	84	1236	495	10.60		73			6	- ∞	173	252	788	724
MEAN		388	65	∞	37	1018	396	5.45		57			∞	5	70	991	270	586
No. of		•	,	•													;	
Analysis 2000**	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
MIN		288	19	5	13	563	113	0		16			•	-	25	23	9	335
MAX		627	46	20	92	1251	271	-		38			6	· <b>v</b> n	268	103	, ę	786
MEAN		489	32	12	39	1037	192	0		28			∞	4	172	87	14	642
**6661																		!
MIN		332	33	11	9	521	181	0		24			∞	2	=	31		298
MAX		642	58	14	72	1237	300	_		39			6	٠	231	115		784
MEAN		445	47	13	28	860	249	0		32			∞	3	100	9/	33	511
**8661																		
MIN		356	28.0	7.0	4.0	587	185	0.40	0.20	26.00		5.0	8.18	1.00	29.00	25.0		353
MAX		635	53.0	7.0	0.89	1330	257	1.00	0.30	34.00		9.0	8.53	5.00	230.00	146.0		834
MEAN		496	43.8	7.0	33.3	980.75	232.5	89.0	0.25	30.00		5.0	8.38	3.25	140.25	87.3	52.0	617
1997**																		
MIN		308	29	82	10	531	151	-	0	61			∞	-	=	35		310
MAX		909	69	82	179	1344	460	_	0	65			6	4	221	145		840
MEAN		440	49	82	7.1	1013	285	_	0	38			6	3	118	107	79	637
1995																		
Z	10	290	63	10	∞	515	300	0	0	30	0	5	∞	1	12	32		350
MAX	10	440	74	35	40	955	490		0	73	0	10	6	4	46	190		700
MEAN	10	344	71	24	26	749	415	-	0	58	0	9	6	3	31	116	36	550
HISTORICAL 1977-2000	L 1977-2000																	
MIN	0.10	233	11.1	1.0	1.5	410	151	0.05	0.05	2.40	0.01	0.1	7.00	1.00	∞			267
MAX	25.00	642	136.9	85.0	179.0	1709	631	16.20	1.25	109.00	1.37	39.0	8.93	25.60	268			1170
MEAN	5.24	359.25	62.14	13.37	22.68	863	323	1.06	0.18	40.17	0.10	3.23	8.09	4.44	49.25	94.49	69.5	452
No. of Analysis	42	79	97	7.0	79	40	44	7,	ς.	9	Ş	5	7	70	ę			Ę
	!	•	:	Ĭ	•	}	2	5	77	17	ñ	10	ţ	0/	0/	Α,	0	۲)

Quality parameters are reported as mg/l unless otherwise noted.
 Data. Database input restricted to values greater then laboratory minimum detection limit.

# TABLE 24: COTTONWOOD CANYON CREEK WATER QUALITY \* SW-3

2001** SAMPLE DATES AC	ACIDITY	ALKALINITY BICARBONATE	CALCIUM	CARBONATE	CHLORIDE	CONDUCTIVITY (umhos/cm)	HARDNESS	IRON	IRON DISSOLVED	MAGNESIUM	MANGANESE	OIL & GREASE	PH (units)	POTASSIUM	SODIUM	SULFATE	TSS	TDS
20010309		401	37	=	64	1291	224	0.2					8.53	5	169	183		695
20010418		373	34	32	45	1174	221	0.2		33			8.57	٠,	170	188	=	645
20010606		307	55	!	47	951	335	!		48			8.32	2	40	104		440
20010920		451	117		237.4	2300	745			110			8.33	8	153	381.7		1299
2001**																		
MIN		307	34	=	45	156	221	0.20		32			8.32	2.00	40	104	Ξ	440
MAX		451	117	: &	73.7	2300	745	0.0		110			8 57	200	170	382	: =	1200
MEAN		383	<u> </u>	, c	67	1429	381	0.20		21. 35			8.44	4.25	133	200	: =	02.2
		60	5	;	2	(74.1	100	0.20		3			<b>.</b>	7.	3	117	=	2
No. of Analysis	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
2000**																		
MIN		485	15	81	31	1230	8	0		15			6	4	233	112	12	774
MAX		602	32	48	209	2800	216	0		33			6	5	531	147	18	1563
MEAN		552	23	30	181	1652	159	0		25			6	5	325	130	15	886
1999**																		
MIN		384	24	∞	4	703	171	0		27			6	2	82	49	10	420
MAX		\$65	41	70	76	1277	232	-		37			6	ۍ	249	144	123	782
MEAN		460	30	28	38	1064	201	_		31			6	4	168	Ξ	53	640
1998**																		
MIN		308	20.0	18.0	10.0	592	165	0.40	0.20	27.00			8.06	2.00	33.00	35.0	8.0	340
MAX		633	48.0	37.0	61.0	1361	231	2.30	0.20	31.00			8.72	9.00	267.00	181.0	224.0	876
MEAN		484	31.8	26.0	36.3	1006.25	198.5	1.10	0.20	29.00			8.52	4.00	178.25	111.8	99.3	664.5
1997**																		
MIN		350	32	10	22	795	181	_		24		78	∞	7	29	121	=	490
MAX		695	115	18	95	1595	289	_		26		28	6	4	220	438	114	1130
MEAN		479	57	14	48	1224	329	-		46		28	<b>∞</b>	4	153	228	78	798
	16	265	55	20	20	651	327	-		46		3	∞	2	25	100	38	400
	27	452	Ξ	20	78	1491	652	_		95		8	6	4	100	398	38	1052
	22	385	91	20	99	1237	563	-		82		3	<b>∞</b>	, E	78	267	38	852
	01	290	71		7	909	310	0	0	32	0	ς,	<b>∞</b>	-	12	30	2	380
	9	420	102	30	26	1184	654	_	0	26	0	8	6	4	8	355	95	096
MEAN	10	365	06	17	39	956	536	-	0	75	0	2	∞	es.	49	241	35	763
HISTORICAL 1977-2000	2000																	
MIN	0.1	253	14 3	0.1	1.7	\$06	g	0 04	0.05	2 40	100	0.0	7 20	1 00	,-	"	10	40
	27.0	633	159.0	70.0	0.709	2800	687	19.00	0.43	97.00	2.48	114.0	006	30.00	531	438	5024.0	1563
	5.2	372	69.1	12.9	36.2	1165	391	1.18	0.14	46.58	0.14	8.4	8.12	4.30	74.00	155.3	143.6	575
No of Amelican	,	6	S	ç	S	3	Ş	i	;	6	ç	ç	ç	ē	5	6	;	6
	F	ç	70	37	70	‡	96	<del>*</del>	77	ç	c	6	0/	10	70	ç	?	ç

<sup>•</sup> Quality parameters are reported as mg/l unless otherwise noted. •• Data: Database input restricted to values greater then laboratory minimum detection limit.

TABLE 25: GRIMES WASH WATER QUALITY \* GWR01 - RIGHT FORK

2001 ••SAMPLE DATES	ACIDITY	ALKALINITY BICARBONATE	CALCIUM	CARBONATE	CHLORIDE	CONDUCTIVITY (umbos/cm)	DISSOLVED	HARDNESS	IRON TOTAL	IRON DISSOLVED	MAGNESIUM	MANGANESE	OIL & GREASE	PH (units)	PH (units) POTASSIUM	SODIUM	SULFATE	TSS	TDS
2001** 2000** 1999**	NO SAMPL NO SAMPL NO SAMPL NO SAMPL	NO SAMPLES COLLECTED DURING 2001 -NO FLOW NO SAMPLES COLLECTED DURING 2000 -NO FLOW NO SAMPLES COLLECTED DURING 1999 - NO FLOW NO SAMPLES COLLECTED DURING 1998 - NO FLOW	DURING 2000 DURING 1999 DURING 1998	-NO FLOW -NO FLOW -NO FLOW -NO FLOW															
1997**																			
MIN		240	57		s	419	6	237	2.60		23			8.39	7	9	55		280
MAX		240	57		٠, ٠	419	0.0	237	2.60		23			8.39	٦ ,	9	55		280
MEAN		240	/ -	-	n –	<del>4</del> –	<b>&gt;</b>	/c7 -	7.00	_	<b>C</b> 7 –	_		6.9 -	7	o	ვ –	_	007 
No flow during 1989 - 96	ng 1989 - 96	•	•	i	•		•		•	i.		ı	,		1			ı	Į.
1988 M IN	39.0	112	43.8	<1.0	26.4	225	9.70	154	0.61	0.78	10.90	90.0	9.0	8.20	5.20	1.90	27.0	8.0	196
MAX	39.0	112	43.8	<1.0	26.4	225	9.70	154	19.0	0.78	10.90	0.04	9.0	8.20	5.20	1.90	27.0	8.0	196
MEAN	39.0	112	43.8	<1.0	26.4	225	9.70	154	0.61	0.78	10.90	0.04	0.6	8.20	5.20	1.90	27.0	8.0	196
1987																			
MIN	<1.0	104	34.4	<1.0	3.0	130	98.9	112	3.31	20.60	6.30	0.05	i	7.20	7.60	2.00	20.0	2000.0	115
MAX	<1.0	104	34.4	<1.0	3.0	130	08.9	112	3.31	20.60	6.30	0.05	i	7.20	7.60	2.00	20.0	2000.0	115
MEAN	<1.0	104	34.4	<1.0	3.0	130	08.9	112	3.31	20.60	6.30	0.05	i	7.20	7.60	2.00	20.0	2000.0	115
1986	7	97	000	-	6 3	377	3.6	,,,	\$0.07	90 07	35.70	100	<b>.</b>	7.50	091	3.40	40.0	•	cyc
MAX	0.7	320	32.0 52.0	0.7	11.5	089	0 00	320	\$0.05 \$0.00	0.73	46.20	0.05	2.5	8.10	3.30	20.40	120.0	257.0	389
MEAN	0.12	275	41.6	<1.0	10.2	547.6	80.00	268	<0.05	0.24	39.90	0.02	0.7	7.80	2.50	15.70	61.3	9.09	316
AL	197																		
MIN	0.1	104	30.0	1.0	3.0	190	8.9	112	0.01	0.05	6.30	0.01	0.5	7.20	1.60	1.85	20.0	0.5	115
MAX	39.0	320	57.0	0.1	26.4	750	8.6	320	20.60	3.31	46.20	0.30	0.6	8.70	7.64	20.44	161.7	7116.0	700
MEAN	5.5	238	42.6	0.1	10.8	557	9.8	238	1.38	0.47	31.96	90.0	8.	<b>8</b> .09	3.21	13.20	63.7	370.2	338
No. of Analysis	111	10	10	6	12	43	10	01	47	6	6	42	12	47	10	10	14	47	47

Qualky parameters are reported as mg/l unkes otherwise noted.
 Data: Database input restricted to values greater then laboratory minimum detection fimit.

### TABLE 26: GRIMES WASH WATER QUALITY \* GWR02 - LEFT FORK

MAX MEAN  MEAN  MIN  MIN  MIN  MIN  MIN  MIN  MIN  M	2.5.3 3.29 3.70 3.50 2.96 2.96 2.96 2.96 2.96 3.68 3.68 3.68 3.68 3.12 3.12 3.12 3.12 3.12 3.12 3.12 3.12	329 329 370 350 296 296 296 297 368 368 368 369 368 372 312 312 312 312 313 313 314 315 317 317 318 317 318	2.5.3 3.29 3.70 3.70 3.70 3.70 2.96 2.96 2.96 2.96 2.96 3.68 3.68 3.68 3.12 3.12 3.12 3.12 3.12 3.12 3.13 3.13
329 370 370 370 296 296 296 296 368 368 368 368 368 368 376 276 276 276 276 276 276 276 312 312 312 312 312 313 313 313 314 315 316 317 318 318 318 318 318 318 318 318 318 318	329 44 370 72 350 58 2 2 296 40 296 40 296 40 293 35 446 40 293 35 436 61.0 309 47 318 60 276 88.9 276 88.9 277 38.9 278 312 71.5 312 71.5 312 71.5 313 71.1	329 44 370 72 350 58 2 2 2 96 40 296 40 296 40 296 40 40 298 40 309 46.5 310 71.5 318 60 318 60 319 47.7 320 46.5 321 68.9 276 88.9 276 88.9 276 88.9 276 88.9 276 88.9 276 88.9 276 88.9 276 88.9 277 88.9 278 23 312 71.5 312 71.5 313 71.5 314 71.5 315 71.5 317 71.5 318 2.3 482 71.1 319 71.5 311 36.0	329 44 370 72 350 88 296 40 296 40 296 40 296 40 40 293 35 436 79 368 61.0 368 61.0 373 46.5 276 88.9 276 88.9 276 88.9 276 88.9 276 88.9 276 88.9 276 88.9 277 33 312 71.5 312 71.5 313 36.0 360 360 360 360 373 482 71.1 383 373 482 71.1
296 40 296 40 296 40 296 40 293 35 436 79 365 57 369 46.5 369 40 379 40 389 61.0 389 60 276 88.9 0.0 276 88.9 0.0 277 38.9 0.0 278 88.9 0.0 278 88.9 0.0 278 88.9 0.0 279 88.9 0.0 270 88.9 0.0 270 88.9 0.0 271 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 317 31.1 15.0	290	296 40 296 40 296 40 296 40 293 35 436 79 365 57 369 46.5 379 46.5 389 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 277 33 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 1.5 0	296 40 296 40 296 40 296 40 293 35 436 79 365 57 369 46.5 379 46.5 389 0.0 276 88.9 0.0 277 33 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 38.0 <1.0 315 71.5 <1.0 317 38.1 38.0 <1.0 318 2.3 <1.0 319 482 71.1 15.0 311 38.0 <1.0 311 38.0 <1.0 312 71.5 <1.0 313 38.0 <1.0
296 40 296 40 296 40 293 33 436 79 365 57 249 32.0 368 61.0 309 46.5 309 46.5 318 60 276 88.9 0.0 276 88.9 0.0 277 33 47 47 47 47 47 47 47 47 47 47 47 47 47	296 40 296 40 296 40 293 35 436 79 365 57 309 46.5 309 46.5 309 46.5 309 46.5 309 40.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 277 88.9 0.0 278 28.9 0.0 278 28.9 0.0 278 28.9 0.0 279 28.9 0.0 270 270 270 270 270 270 270 270 270 270	296 40 296 40 296 40 293 33 436 79 365 57 309 46.5 249 32.0 368 61.0 309 46.5 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 277 88.9 0.0 278 88.9 0.0 278 88.9 0.0 278 88.9 0.0 279 88.9 0.0 270 88.9 0.0 271 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 35.0 <1.0 315 61.0	296 40 296 40 296 40 293 35 436 79 365 57 309 46.5 309 46.5 309 46.5 309 46.5 309 40.0 276 88.9 0.0 276 88.9 0.0 277 38.9 0.0 278 88.9 0.0 278 88.9 0.0 279 88.9 0.0 270 88.9 0.0 270 88.9 0.0 271 15 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 38.0 <1.0 315 71.5 <1.0 316 71.5 <1.0 317 38.1 38.0 <1.0 318 71.5 <1.0 319 71.5 <1.0 310 71.5 <1.0 311 38.1 38.0 <1.0 312 71.1 15.0 313 38.0 <1.0
296 40 296 40 296 40 293 35 436 79 365 57 249 32.0 368 61.0 309 46.5 280 47 280 47 280 47 280 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0	296 40 296 40 296 40 293 35 436 79 363 57 249 32.0 368 61.0 309 46.5 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0	296 40 296 40 297 40 298 40 365 57 368 61.0 368 61.0 369 46.5 373 375 713 375 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 315 0.0	296 40 296 40 297 40 298 40 365 57 368 61.0 368 61.0 369 46.5 373 373 375 73 376 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 38.1 38.0 28 31 38.0 <1.0 38 31 38.0 <1.0 39 45.5 <1.0
296 40 293 35 436 79 365 57 368 61.0 309 46.5 328 47 329 32.0 369 46.5 368 61.0 373 374 375 688.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 38.1 3.8	296 40 293 35 436 79 365 57 368 61.0 368 61.0 37 280 47 280 47 355 73 37 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 38.1 38.1 38.1	296 40 293 35 436 79 365 57 368 61.0 369 46.5 368 61.0 378 61.0 389 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 35.0 <1.0 38.1 38.0	296 40 297 40 298 40 368 40 369 35 368 77 368 61.0 369 46.5 37 388 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 38.1 38.0 <1.0 331 38.0 <1.0 348 7.1 15.0
293 35 436 79 365 57 249 32.0 368 61.0 309 46.5 355 73 355 73 318 60 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0	293 35 436 79 365 57 249 32.0 368 61.0 309 46.5 226 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 71.5 <1.0 317 38.1 35.0 <1.0	293 35 436 79 365 57 249 32.0 368 61.0 309 46.5 355 73 318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 71.5 <1.0 317 38.9 <1.0 318 2.3 <1.0 482 71.1 15.0 317 38.1 36.0 <1.0	293 35 436 79 365 57 249 32.0 368 61.0 309 46.5 226 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 38.9 0.0 276 38.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 38.1 15.0 314 45.5 <1.0
293 35 436 79 365 57 249 32.0 368 61.0 309 46.5 355 73 355 73 56 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 482 71.1 15.0	293 35 436 79 365 57 249 32.0 368 61.0 389 60.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 482 71.1 15.0 313 482 71.1 15.0	293 35 436 79 365 57 249 32.0 368 61.0 359 47 355 73 318 60 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 35.0 <1.0 315 38.9 <1.0	293 35 436 79 365 57 249 32.0 368 61.0 389 47 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 38.1 15.0 314 38.1 15.0 315 38.1 38.1 38.1 38.1 38.1 38.1 38.1 38.1
436     79       365     57       249     32.0       368     61.0       369     46.5       280     47       355     73       56     88.9     0.0       276     88.9     0.0       276     88.9     0.0       312     71.5     <1.0	436     79       365     57       249     32.0       368     61.0       369     46.5       280     47       355     73       36     88.9     0.0       276     88.9     0.0       276     88.9     0.0       312     71.5     <1.0	436     79       365     57       249     32.0       368     61.0       309     46.5       280     47       355     73       276     88.9     0.0       276     88.9     0.0       276     88.9     0.0       312     71.5     <1.0	436     79       365     57       249     32.0       368     61.0       369     46.5       280     47       355     73       276     88.9     0.0       276     88.9     0.0       276     88.9     0.0       312     71.5     <1.0
365 57 249 32.0 368 61.0 309 46.5 280 47 280 47 285 73 318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 38.1 15.0	365 57 249 32.0 368 61.0 309 46.5 280 47 280 47 355 73 318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 11.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0	365 57 249 32.0 368 61.0 309 46.5 280 47 280 47 281 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 312 71.5 312 71.5 482 71.1 15.0 381 36.0 <1.0 381 38.0 <1.0 381 38.0 <1.0 381 38.0 <1.0 381 38.0 <1.0 381 38.0 <1.0 381 38.0 <1.0 381 38.0 <1.0 381 38.0 <1.0 382 41.0 383 41.0 383 41.0 383 41.0 384 41.0	365 57 249 32.0 368 61.0 309 46.5 280 47 280 47 281 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 45.5 <1.0 334 45.5 <1.0
249 32.0 368 61.0 280 47 280 47 355 73 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.3 38.1 15.0	249 32.0 368 61.0 280 47 280 47 355 73 60 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0	249 32.0 368 61.0 280 47 280 47 355 73 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 71.5 <3.0 312 7	249 32.0 368 61.0 280 47 280 47 355 73 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 276 1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 71.5 <1.0 316 71.5 <1.0 317 38.1 35.0 318 2.3 <1.0 482 71.1 15.0 319 38.1 38.0 <1.0 310 485 71.1 15.0
249 52.0 368 61.0 280 47 280 47 355 73 318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 317 38.1 15.0	249 52.0 368 61.0 280 47 355 73 318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 2.3 <1.0 482 71.1 15.0 317 38.1 38.0 <1.0	249 52.0 368 61.0 280 47 280 47 355 73 318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 318 2.3 <1.0 482 71.1 15.0 381 36.0 <1.0 381 38.0 <1.0	249 52.0 368 61.0 280 47 355 73 318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 482 71.1 15.0 313 38.1 38.0 <1.0 482 71.1 15.0 314 38.1 38.0 <1.0 315 410 316 45.5 <1.0
280 46.5 280 47 355 73 318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0	280 46.5 280 47 355 73 318 60 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0	280 46.5 280 47 355 73 318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.3 38.1 15.0 281 36.0 <1.0 381 38.0 <1.0	280 46.5 280 47 355 73 318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 38.1 15.0 331 38.0 <1.0 34455 <1.0
280 40.5 280 47 355 73 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 71.5 <1.0 317 38.1 15.0	280 40.5 280 47 355 73 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 38.1 38.0 <1.0	280 40.5 280 47 355 73 60 66 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 38.0 <1.0 38.1 38.0 <1.0 38.1 38.0 <1.0 38.1 38.0 <1.0 38.1 38.0 <1.0	280 40.5 280 47 355 73 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 38.1 38.0 281 36.0 <1.0 281 36.0 <1.0 394 45.5 <1.0
280 47 355 73 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 71.5 <1.0 317 38.1 38.1	280 47 355 73 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 71.5 <1.0 317 38.1 35.0	280     47       355     73       60     60       276     88.9     0.0       276     88.9     0.0       276     88.9     0.0       312     71.5     <1.0	280 47 355 73 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 482 71.1 15.0 482 71.1 15.0 313 38.1 38.0 <1.0 482 71.1 15.0 314 38.1 38.0 <1.0 482 71.1 15.0 317 38.1 38.0 <1.0 318 58.0 <1.0
355 73 318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 71.5 <1.0 317 31.1 15.0	355 73 318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0	355 73 318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 <1.0 317 38.1 35.0 <1.0 318 2.3 <1.0 319 38.1 38.0 <1.0	355 73 318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.3 <1.0 482 71.1 15.0 311 38.1 38.1 3.8 23 <1.0 482 71.1 15.0 31 38.1 38.0 <1.0 31 38.0 <1.0
318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 71.5 <1.0 317 38.1 38.1	318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 <1.0 317 38.1 35.0 <1.0	318 60 276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 <1.0 317 38.1 36.0 <1.0 331 58.0 <1.0	318     60       276     88.9     0.0       276     88.9     0.0       276     88.9     0.0       312     71.5     <1.0
276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0	276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 <1.0 317 38.1 35.0 <1.0	276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 6.0 <1.0 315 6.0 <1.0 317 38.1 36.0 <1.0 318 58.0 <1.0	276 88.9 0.0 276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 482 71.1 15.0 311 38.1 38.1 3.8 281 36.0 <1.0 331 58.0 <1.0
276     88.9     0.0       276     88.9     0.0       276     88.9     0.0       312     71.5     <1.0	276     88.9     0.0       276     88.9     0.0       276     88.9     0.0       312     71.5     <1.0	276     88.9     0.0       276     88.9     0.0       276     88.9     0.0       312     71.5     <1.0	276     88.9     0.0       276     88.9     0.0       276     88.9     0.0       312     71.5     <1.0
276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 313 71.5 <1.0 314 71.5 <1.0 315 71.5 <1.0 317 38.1 15.0	276 88.9 0.0 276 88.9 0.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 482 71.1 15.0 317 38.1 36.0 <1.0	276     88.9     0.0       276     88.9     0.0       312     71.5     <1.0	276     88.9     0.0       276     88.9     0.0       312     71.5     <1.0
312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 482 71.1 15.0 317 38.1 3.8	276     88.9     0.0       312     71.5     <1.0	276     88.9     0.0       312     71.5     <1.0	276     88.9     0.0       312     71.5     <1.0
312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 188 2.3 <1.0 482 71.1 15.0 317 38.1 3.8	312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 118 2.3 <1.0 482 71.1 15.0 317 38.1 38.0 <1.0	312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 188 2.3 <1.0 482 71.1 15.0 317 38.1 3.8 281 36.0 <1.0 31 58.0 <1.0	312 71.5 <1.0 312 71.5 <1.0 312 71.5 <1.0 188 2.3 <1.0 482 71.1 15.0 317 38.1 3.8 281 36.0 <1.0 381 45.5 <1.0
34.0     312     71.5     <1.0	34.0     312     71.5     <1.0	34.0     312     71.5     <1.0	312       71.5       <1.0
34.0     312     71.5     <1.0	34.0     312     71.5     <1.0	34.0     312     71.5     <1.0	312 /1.5 <1.0 312 /1.5 <1.0 118 2.3 <1.0 482 71.1 15.0 317 38.1 3.8 281 36.0 <1.0 331 58.0 <1.0 304 45.5 <1.0
34.0     312     71.5     41.0       <1.0	34.0     312     71.5     31.0       <1.0	34.0     312     71.5     51.0       44.0     312     71.5     41.0       44.0     482     71.1     15.0       44.0     34.1     38.1     3.8       44.0     281     36.0     41.0       45.0     331     58.0     41.0	188 2.3 <1.0 482 71.1 15.0 317 38.1 3.8 281 36.0 <1.0 331 58.0 <1.0 45.5 <1.0
<ul> <li>&lt;1.0</li> <li>188</li> <li>&lt;2.3</li> <li>&lt;1.0</li> <li>&lt;1.0</li> <li>482</li> <li>71.1</li> <li>15.0</li> <li>&lt;1.0</li> <li>317</li> <li>38.1</li> <li>3.8</li> </ul>	<ul> <li>&lt;1.0</li> <li>188</li> <li>2.3</li> <li>&lt;1.0</li> <li>482</li> <li>71.1</li> <li>15.0</li> <li>&lt;1.0</li> <li>317</li> <li>38.1</li> <li>3.8</li> <li>&lt;1.0</li> <li>&lt;1.0</li> </ul>	<ul> <li>&lt;1.0</li> <li>&lt;1.8</li> <li>&lt;1.0</li> </ul>	188     2.3     <1.0
<ul> <li>&lt;1.0</li> <li>188</li> <li>&lt;2.3</li> <li>&lt;1.0</li> <li>&lt;482</li> <li>71.1</li> <li>15.0</li> <li>&lt;1.0</li> <li>317</li> <li>38.1</li> <li>3.8</li> </ul>	<ul> <li>&lt;1.0 188 2.3 &lt;1.0</li> <li>&lt;1.0 482 71.1 15.0</li> <li>&lt;1.0 317 38.1 3.8</li> <li>&lt;1.0 281 36.0 &lt;1.0</li> </ul>	<ul> <li>&lt;1.0</li> <li>188</li> <li>&lt;2.3</li> <li>&lt;1.0</li> <li>482</li> <li>71.1</li> <li>15.0</li> <li>&lt;1.0</li> <li>31.7</li> <li>38.1</li> <li>38</li> <li>&lt;1.0</li> <li>&lt;1.0</li> <li>&lt;1.0</li> <li>&lt;1.0</li> <li>&lt;1.0</li> <li>&lt;1.0</li> <li>&lt;1.0</li> </ul>	188 2.3 <1.0 482 71.1 15.0 317 38.1 3.8 281 36.0 <1.0 331 58.0 <1.0 304 45.5 <1.0
<ul> <li>462 / 1.1 1.5.0</li> <li>&lt;1.0 317 38.1 3.8</li> </ul>	<ul> <li>4.0</li> <li>4.0</li> <li>4.1</li> <li>4.1</li> <li>4.2</li> <li>4.3</li> <li>4.4</li> <li>4.5</li> <li>4.6</li> <li>4.7</li> <li>4.7</li> <li>4.8</li> <li>4.9</li> <li>4.0</li> <li>4.0</li> <li>4.0</li> </ul>	<ul> <li>40. 46. 71.1 15.0</li> <li>41.0 281 36.0 &lt;1.0</li> <li>41.0 331 58.0 &lt;1.0</li> </ul>	281 36.0 <1.0 331 58.0 <1.0 304 45.5 <1.0
	<1.0 281 36.0 <1.0	<ul> <li>&lt;1.0</li> <li>&lt;281</li> <li>36.0</li> <li>&lt;1.0</li> <li>&lt;331</li> <li>&lt;38.0</li> <li>&lt;1.0</li> </ul>	281 36.0 <1.0 331 58.0 <1.0 304 45.5 <1.0
	<1.0 281 36.0 <1.0	<ul><li>&lt;1.0</li><li>281</li><li>36.0</li><li>&lt;1.0</li><li>&lt;1.0</li><li>331</li><li>58.0</li><li>&lt;1.0</li></ul>	281 36.0 <1.0 331 58.0 <1.0 304 45.5 <1.0
331 58.0 <1.0 304 45.5 <1.0 188 2.3 1.0	304 45.5 <1.0 188 2.3 1.0	188 2.3 1.0	
331 58.0 <1.0 304 45.5 <1.0 188 2.3 1.0 482 88.9 26.0	304 45.5 <1.0 188 2.3 1.0 482 88.9 26.0	188 2.3 1.0 482 88.9 26.0 313 40.1 4.5	34.0 482 88.9 26.0
<ul> <li>&lt;1.0</li> <li>&lt;1.0</li> <li>331</li> <li>&lt;1.0</li> <li></li></ul>	304 45.5 <1.0 188 2.3 1.0 482 88.9 26.0 313 49.1 4.5	188 2.3 1.0 482 88.9 26.0 313 49.1 4.5	34.0 482 88.9 26.0 4.2 313 49.1 4.5

Quality parameters are reported as mg/l unless otherwise noted.
 Data: Database input restricted to values greater then laboratory minimum detection limit.

TABLE 27: GRIMES WASH WATER QUALITY \* GWR03 - RIGHT FORK

	60 1169 418 651 3640 843 239 2151 623	60 1169 651 3640 239 2151	60 1169 418 0.80	60 1169 418 0.80	60 1169 418 0.80	20 007 007	10.7 01.7 08.0 08.7 09.7 09.7 09.1 09.1 09.1	\$01 0 10:1 011 010 0077 0:01	0 167
239	239 2151 623	2151 623	1640 841 0.80	3640 843 0.80	3640 843 0.80	1169 418 0.80 53	1109 418 0.80 53 7.87 7.87 3.440 8.43 0.80 1.18 8.43	1169 418 0.80 53 7.87 2 3640 843 0.80 118 843 6	1169 418 080 53 7.87 2 3640 843 080 118 843 6
	4 4	4	651 3640 843 0.80 239 2151 623 0.80 4 4 4 4 4 4	651 3640 843 0.80 239 2151 623 0.80 4 4 4 4 4 4	651 3640 843 0.80 118 239 2151 623 0.80 86 4 4 4 4 4 4 4	651 3640 843 0.80 118 239 2151 623 0.80 86 4 4 4 4 4 4 4 4 4	651 3640 843 080 118 843 239 2151 623 080 86 8.24 4 4 4 4 4 4 4 4 4	651 3640 843 0.80 118 8.43 6 429 239 2151 623 0.80 86 8.24 5 194 4 4 4 4 4 4 4 4 4 4 4 4 4 4	651 3640 843 0.80 118 8.43 6 429 239 2151 623 0.80 86 8.24 5 194 4 4 4 4 4 4 4 4 4 4 4 4 4
	223 1895 563 377 0040 664	223 1895 563 0.50 3776 9960 696 1.00	223 1895 563 0.50 3726 0860 606 1.00	223 1895 563 0.50 73	223 1895 563 0.50 73 3276 0860 606 100	223 1895 563 0.50 73 8	223 1895 563 0.50 73 8.15	223 1895 563 0.50 73 8.15 5 150	223 1895 563 0.50 73 8.15 5 150 3
	4136 650	4136 650	9500 050 1.00 4136 650 0.75	9900 090 1.00 4136 650 0.75	950 050 1.00 101 4136 650 0.75 88	950 050 1.00 101 4136 650 0.75 88	950 050 1.00 101 4136 650 0.75 88	9500 050 1.00 101 8.22 6 1870 4136 650 0.75 88 8.20 5 630	9500 050 1.00 101 8.22 6 1870 4136 650 0.75 88 8.20 5 630
	1283 542 1832 703	1283	1283 542 1832 703	1283 542 0.20 1832 703 2.20	1283 542 0.20 73 1832 703 2.20 98	1283 542 0.20 73 1832 703 2.20 98	1283 542 0.20 73 1832 703 2.20 98	1283         542         0.20         73         8.18         5         64           1832         703         2.20         98         8.45         6         169	1283         542         0.20         73         8.18         5         64           1832         703         2.20         98         8.45         6         169
	1612 598	1612 598	1612 598 1.20	1612 598 1.20	1612 598 1.20 81	1612 598 1.20 81 8.29	1612 598 1.20 81 8.29 5	1612 598 1.20 81 8.29 5 118	1612 598 1.20 81 8.29 5 118 362
399.0 2440	1216 495 2440 731	1216	1216 495 2440 731	1216 495 0.20 2440 731 1.40	1216	216	1216	1216	1216
187.0 1707.75	1,707,75 619,5	1707.75	1,707,75 619,5	1707.75 619.5 0.67	1707.75 619.5 0.67 81.75	1707.75 619.5 0.67 81.75 8.29	1707.75 619.5 0.67 81.75 8.29 5.75	1707.75 619.5 0.67 81.75 82.9 5.75 132.00	1707.75 619.5 0.67 81.75 8.29 5.75
	1362 487	1362 487	1362 487 0	1362 487 0	1362 487 0	1362 487 0 66	1362 487 0 66 8	1362 487 0 66 8 3 83	1362 487 0 66 8 3 83
255 1900	3040 699 1900 591	3040 699 1900 591	3040 699 0 1900 591 0	3040 699 0 1900 591 0	3040 699 0 1900 591 0	3040 699 0 89 1900 591 0 <b>78</b>	3040 699 0 89 8 1900 591 0 <b>78 8</b>	3040 699 0 89 8 6 443 1900 591 0 <b>78 8 5</b> 182	3040 699 0 89 8 6 443 1900 591 0 <b>78 8 5</b> 182
	1184 599	1184 599	1184 599 0.06	1184 599 0.06	1184 599 0.06	1184 599 0.06 75	1184 599 0.06 75 8	1184 599 0.06 75 8 6 49	1184 599 0.06 75 8 6 49
575 3070	3070 775	3070 775	3070 775 0.40	3070 775 0.40	3070 775 0.40	3070 775 0.40 113	3070 775 0.40 113 8	3070 775 0.40 113 8 7 447	3070 775 0.40 113 8 7 447
	1831 003	61.0 600 1001		20 21.0 200 1201	70 710 710 710 710	101 000 0.15 00			
27 970 94 1128	970 440 112 <b>8</b> 572	970 440 0.10 1128 572 0.60	970 440 0.10 0.10 1128 572 0.60 0.10	970 440 0.10 0.10 55 1128 572 0.60 0.10 74	970 440 0.10 0.10 55 0 1128 572 0.60 0.10 74 0	970 440 0.10 0.10 55 0 5 1128 572 0.60 0.10 74 0 5	970 440 0.10 0.10 55 0 5 8 1128 572 0.60 0.10 74 0 5 9	970 440 0.10 0.10 55 0 5 8 6 44 1128 572 0.60 0.10 74 0 5 9 8 82	970 440 0.10 0.10 55 0 5 8 6 44 1128 572 0.60 0.10 74 0 5 9 8 82
	1072 499	1072 499 0.28	1072 499 0.28 0.10	1072 499 0.28 0.10 65	1072 499 0.28 0.10 65 0	1072 499 0.28 0.10 65 0 5	1072 499 0.28 0.10 65 0 5 8	1072 499 0.28 0.10 65 0 5 8 7 72	1072 499 0.28 0.10 65 0 5 8 7 72
	941 430	941 430 0.10	941 430 0.10 0.20	941 430 0.10 0.20 53.00	941 430 0.10 0.20 53.00 0.10 5.0	941 430 0.10 0.20 53.00 0.10 5.0 8.06	941 430 0.10 0.20 53.00 0.10 5.0 8.06 8.00	941 430 0.10 0.20 53.00 0.10 5.0 8.06 8.00 37.00	941 430 0.10 0.20 53.00 0.10 5.0 8.06 8.00 37.00 180.0
	1560 607	1560 607 0.20	1560 607 0.20 1.90	1560 607 0.20 1.90 82.00	1560 607 0.20 1.90 82.00 0.20 5.0	1560 607 0.20 1.90 82.00 0.20 5.0 8.81	1560 607 0.20 1.90 82.00 0.20 5.0 8.81 9.00	1560 607 0.20 1.90 82.00 0.20 5.0 8.81 9.00 114.00	1560 607 0.20 1.90 82.00 0.20 5.0 8.81 9.00 114.00 310.0
61.5	1199 498	498 0.18	1199 498 0.18 0.90	1199 498 0.18 0.90 63.00	1199 498 0.18 0.90 63.00 0.13 5.0	1199 498 0.18 0.90 63.00 0.13 5.0 8.42	1199 498 0.18 0.90 63.00 0.13 5.0 8.42 8.25	1199 498 0.18 0.90 63.00 0.13 5.0 8.42 8.25 73.00	1199 498 0.18 0.90 63.00 0.13 5.0 8.42 8.25 73.00 227.5
	590 364	590 364 0.05	590 364 0.05 0.23	590 364 0.05 0.23 30.40	590 364 0.05 0.23 30.40 0.06 0.0	590 364 0.05 0.23 30.40 0.06 0.0 7.76	590 364 0.05 0.23 30.40 0.06 0.0 7.76 2.10	590 364 0.05 0.23 30.40 0.06 0.0 7.76 2.10 27.10	590 364 0.05 0.23 30.40 0.06 0.0 7.76 2.10 27.10 120.0
103.7	103.7 3280 736	103.7 3280 736 0.22	103.7 3280 736 0.22 5.10	103.7 3280 736 0.22 5.10 93.00	103.7 3280 736 0.22 5.10 93.00 0.10 5.0	103.7 3280 736 0.22 5.10 93.00 0.10 5.0 8.61	103.7 3280 736 0.22 5.10 93.00 0.10 5.0 8.61 10.00	103.7 3280 736 0.22 5.10 95.00 0.10 5.0 8.61 10.00 60.00	103.7 3280 736 0.22 5.10 93.00 0.10 5.0 8.61 10.00 60.00 370.0
103.7	105.7 5260 7.50	77.0 96.1 07.0 1.50 7.50	01.6 22.0 06.1 0826 1.601	103.7 3260 736 0.22 3.10 53.00 46.2 1640 578 0.16 190 63.35	103.7 3280 736 0.22 3.10 95.00 0.10 3.0 46.2 1640 578 0.16 1.90 63.35 0.09 1.6	46.2 1640 578 0.16 1.90 63.35 0.09 1.6 8.28	103.7 3.280 730 0.12 3.10 53.50 0.10 5.0 8.61 10.00 46.2 1640 578 0.16 1.90 63.35 0.09 1.6 8.28 6.40	103.7 3.280 730 0.14 3.10 93.00 0.10 5.0 8.51 10.00 60.00 46.2 1640 578 0.16 1.90 63.35 0.09 1.6 8.28 6.40 42.60	103.7 3280 738 0.16 1.90 63.35 0.09 1.6 8.28 6.40 42.60 247.0
590 3280	364	364 0.05	364 0.05 0.23 736 0.22 5.10 737 0.22 5.10	364 0.05 0.23 30.40 736 0.22 8.10 99.00 778 1.60 1.60 63.35	364 0.05 0.23 30.40 0.06 0.0 736 0.22 5.10 93.00 0.10 5.0 578 0.16 1.90 63.35 0.09 1.6	364 0.05 0.23 3.040 0.06 0.0 7.76 736 0.22 5.10 99.00 0.10 5.0 8.61 578 0.16 1.90 63.35 0.09 1.6 8.28	364 0.05 0.23 3.040 0.06 0.0 7.76 2.10 7.36 0.22 5.10 93.00 0.10 5.0 8.61 10.00 5.78 0.16 1.90 63.35 0.09 1.6 8.28 6.40	364 0.05 0.23 3.040 0.06 0.0 7.76 2.10 27.10 7.30 7.30 7.30 7.30 7.30 7.30 7.30 7.3	364 0.05 0.23 30.40 0.06 0.0 7.76 2.10 27.10 12.00 73.0 73.0 0.12 5.10 93.00 0.10 5.0 8.61 10.00 60.00 370.0 5.78 0.16 1.90 63.35 0.09 1.6 8.28 6.40 42.60 247.0
		1.40 0.67 0.00 0.40 0.10 0.10 0.10 0.20 0.20 0.20	1.40 0 0 0 0 0.40 0.19 0.10 0.20 0.10 0.20 0.10 0.20 0.10 0.20 0.10 0.20 0.10 0.20 0.00	1.40     95.00       0.67     81.75       0     66       0     89       0.06     78       0.40     75       0.19     89       0.10     0.10       0.26     0.10       0.28     0.10       0.20     53.00       0.20     53.00       0.20     63.00       0.18     0.90       0.18     0.90       0.22     53.00       0.18     0.90       0.22     53.00       0.23     30.40       0.22     51.0       0.23     30.40	1.40         95.00           0.67         81.75           0         89           0.06         78           0.40         75           0.19         89           0.10         0.10         55           0.26         0.10         74         0         5           0.10         0.20         53.00         0.10         5           0.10         0.20         5.0         5           0.10         65         0         5           0.10         65         0         5           0.10         65         0         5           0.10         63.00         0.10         5.0           0.20         1.90         82.00         0.20         5.0           0.18         0.90         63.00         0.13         5.0           0.22         5.10         93.00         0.10         5.0           0.22         5.10         93.00         0.10         5.0	1.40         95.00         8.55           0 67         81.75         8.55           0         89         8.29           0 0         78         8           0 40         75         8           0 10         113         8           0 10         74         0         5           0 0.0         74         0         5         8           0 0.0         65         0         5         8           0 0.0         74         0         5         8           0 0.0         65         0         5         8           0 0.0         82.00         0.10         50         881           0 0.0         82.00         0.20         5         8           0 0.0         82.00         0.20         5         8           0 10         82.00         0.20         50         881           0 0.1         93.00         0.10         50         8.81           0 0.2         50         8.81         9           0 0.2         50         8.81         9           0 0.2         50         8.81         9           0 0.2	1.40         95.00         8.55         7.00           0         81.75         7.20         7.55           0         89         7.8         3           0.06         73         8         5           0.40         113         8         7           0.10         0.10         74         0         5         8         7           0.10         0.10         74         0         5         8         7           0.10         0.20         33.00         0.10         50         8         6           0.10         0.20         82.00         0.20         5.0         8         8         7           0.10         0.20         65         0         5         8         7           0.10         0.20         8.200         0.20         5         8         7           0.10         0.20         63.00         0.10         5.0         8.81         9.00           0.12         0.30         0.10         5.0         8.81         9.00           0.12         5.10         93.00         0.10         5.0         8.61         10.00	1.40         95.00         8.55         7.00         262.00           0         81.75         81.75         7.00         262.00           0         89         8         3         8.3           0.06         73         8         6         443           0.040         113         8         7         182           0.19         113         8         7         447           0.10         113         8         7         447           0.10         74         0         5         8         7         447           0.10         74         0         5         8         7         7         7           0.10         65         0         5         8         7         7         7           0.10         65         0         5         8         7         7         7           0.10         65         0         5         8         7         7         7           0.10         82.00         0.10         5         8         7         7         7           0.10         8.00         63.00         0.10         5         8	1.40         95.00         8.55         7.00         262.00         484.0           0         81.75         8.29         5.75         132.00         385.5           0         89         7         8         6         443         403           0.00         78         8         6         443         403         484           0.40         75         8         7         182         285         285           0.10         113         8         7         447         442         442           0.10         113         8         7         447         442         442           0.10         13         8         7         175         304           0.10         74         0         5         8         7         175         346           0.20         0.10         5         8         7         175         224           0.20         6.20         0.20         5         8         7         170         224           0.10         6.20         0.20         5         8         7         170         224           0.20         0.30         0.10

Quality parameters are reported as mg/l unless otherwise noted.
 Data: Database input restricted to values greater then laboratory minimum detection limit.

Table 28
EAST MOUNTAIN SPRINGS DISCHARGE

Spring	Date Sampled	Flow (GPM)	Temp. C	Date Sampled	Flow (GPM)	Temp.	Seasonal Net Change %
Sheba	07/25/2001	2.9	6.0	10/09/2001	1.0	5.1	-65.52
Elk Spring	07/25/2001	131.0	4.0	10/08/2001	67.0	3.5	<b>-48.85</b>
Burnt Tree	07/26/2001	5.6	5.4	10/04/2001	6.0	5.6	7.14
Jerk Water			•••	10.02001	5.5	2.0	
Pine Springs							
Pine Sp. Trough							
Ted's Tub	07/26/2001	24.0	5.7	10/09/2001	6.6	3.3	-72.50
79-1			•••	10,00,2001	0.0	0.0	.2.00
79-2	07/26/2001	1.9	4.6	10/04/2001	1.2	4.8	-36.84
79-3				10/01/2001	1.2	1.0	30.01
79-4							
79-5							
79-6							
79-7							
79-8							
79-9							
79-10	07/25/2001	10.3	5.2	10/09/2001	3.2	3.3	-68.93
79-11	,	10.0	J.2	10/07/2001	J.2	. 5.5	-00.75
79-12	07/27/200	0.5	est., sheet flow	10/09/2001		damp	
79-13	***************************************	0.2	ost., shoot now	10/07/2001		danp	
79-14							
79-15	07/26/2001	10.5	5.0	10/109/2001	3.9	2.9	-62.86
79-16		10.5	5.0	10/10//2001	3.7	2.7	-02.00
79-17							
79-18							
79-19							
79-20							
79-21							
79-22							
79-23	07/26/2001		dry	10/04/2001	dry		
79-24	07/26/2001		dry	10/04/2001	dry		
79-25	01/20/2001		ury	10/04/2001	шу		
79-26	07/25/2001	4.3	7.7	10/08/2001	1.6	5.5	-62.79
79-27	0772372001	4.5	7.7	10/06/2001	1.0	5.5	-02.79
79-28	07/25/2001	1.2	5.9	10/09/2001	0.4	4.8	-65.83
79-29	07/25/2001	1.5	4.4	10/08/2001	1.0	3.4	-33.33
79-30	0112312001	1.5	7.7	10/06/2001	1.0	3.4	-33.33
79-31							
79-32	07/25/2001	0.6	10.4	10/08/2001	0.4	5.8	-35.48
79-33	01/23/2001	0.0	10.4	10/06/2001	V. <del>4</del>	٥.٥	-33.40
79-34	07/26/2001	8.4	4.8	10/09/2001	0.3	4.4	
79-35	07/25/2001	4.5			1.6	4.4 5.5	-64.44
79-36	V 112312001	7.3	4.6	10/08/2001	1.0	٥.٥	-04.44
<b>79-37</b>							
79-38	07/27/2001	3.3	£ 1	10/00/2021	1 4	4 0	£7 £0
79-39	01/21/2001	J.J	5.1	10/09/2001	1.4	4.8	-57.58
79-40	07/24/2001	1 2	4.5	10/00/2001		<b>J</b>	
80-41	07/26/2001	1.3	4.5	10/09/2001	0.5	dry	00.00
OU-41	07/26/2001	4.8	3.1	10/09/2001	0.5	3.0	-90.00

Table 28
EAST MOUNTAIN SPRINGS DISCHARGE

Spring	Date Sampled	Flow (GPM)	Temp.	Date Sampled	Flow (GPM)	Temp. C	Seasonal Net Change %
80-42							
80-43	07/26/2001		DAMP	10/04/2001		dry	
80-44	07/26/2001	0.5	est., sheet flow	10/09/2001	0.5	est., sheet	flow
80-45							
80-46	07/26/2001	2.1	4.6	10/04/2001		damp	
80-47	07/26/2001	9.4	4.0	10/04/2001	6.8	4.5	-27.66
80-48	07/25/2001	3.8	6.4	10/08/2001	1.6	6.9	<b>-57.89</b>
80-49							
80-50	07/30/2001	0.8	7.4	10/11/2001	0.4	6.3	-52.50
82-51	07/26/2001	1.3	8.7	10/04/2001	0.1		-92.31
82-52	07/26/2001	8.0	4.1	10/04/2001	4.1	4.3	-48.75
84-53							
84-54							
84-55							
84-56	07/26/2001	0.8	5.5	10/09/2001	0.4	3.6	-48.68
85-57							
86-58							
86-59							
89-60	07/27/2001	7.6	7.6	10/09/2001	1.0	3.2	-86.84
89-61	07/25/2001	47.0	4.1	10/08/2001	20.0	3.7	-57.45
89-62							
89-63							
89-64							
89-65	07/25/2001	1.2	6.0	10/08/2001	0.7	6.3	-45.00
89-66	07/25/2001	1.0	6.4	10/08/2001	< 0.05		
89-67	07/25/2001	4.9	4.1	10/08/2001	2.8	4.3	-42.86
89-68	07/25/2001	1.0	8.3	10/08/2001	0.5	8.1	-51.00
89-69	***************************************		0.5	10/00/2001	0.0	0.1	21.00
89-70							
89-71							
91-72	07/27/2001	8.2	8,5	10/10/2001	8.3	8.5	1.22
91-73	07/27/2001	0.9	8.8	10/10/2001	0.51	6.7	-44.57
	027.2001	0.7	0.0	10/10/2001	0.71		
TOTAL FLOW FOR JU	JLY	305.2			134.9		
(W\OUT 80-50, 91-72 &		JUJ.2		Net Change - A			-52.30
(	,			Net Change - B	_		-55.79

TOTAL FOR JULY 2000 = 205.4 GPM JULY 2001 48 % HIGHER THAN JULY 2000

Table 29: East Mountain Yearly Spring Discharge Variations (GPM)

### July Flow Data

	2003	1001	1001	1001	1007	1000	1000	1000	1001	1007	1003	1007	1004	1006	1007	1000	1000	2000	3001
Spring	1703	1704	1705	1700	170	1700	667									9		0007	
Burnt Tree	30.5	9.92	26.1	17.5	10.2	12.0	6.4	4.1	2.0	4.0	9.6	7.5	7.5	5.5	8.5	8.9	2.0	3.3	5.6
Elk Spring	642.3	427.9	390.5	309.7	217.0	217.4	78.5	130.8	176.0	116.8	369.9	46.2	599.3	309.0	235.0	413.0	309.0	107.0	131.0
Sheba	22.9	19.7	14.4	8.6	11.4	10.4	1.1	8.1	10.1	6.3	11.0	6.0	10.6	14.9	4.8	7.2	6.1	5.6	2.9
Ted's Tub	89.0	48.0	39.1	31.6	0.69	0.09	5.0	13.0	21.0	13.6	51.0	0.9	76.2	36.7	42.9	83.2	30.0	20.0	24.0
79-2	9.1	6.7	5.5	2.9	4.0	2.1	2.7	3.9	2.4	2.3	7.5	1.7	5.6	2.0	2.1	2.1	2.2	1.9	1.9
79-10	37.1	20.0	33.3	26.1	26.1	25.0	7.0	10.2	12.5	10.5	30.0	4.0	30.0	17.6	14.0	24.0	20.0	5.2	10.3
79-15	42.9	797	18.2	18.2	14.6	12.7	2.9	3.0	9.0	4.1	20.7	2.0	33.3	11.0	13.6	18.3	15.0	6.3	10.5
79-23	20.0	3.6	8.9	9.0	damb	damb	ф	Ą	damb	<del>đ</del>	damb	ф	no flow	ф	dry	0.2	dry	dry	da y
79-24	9.3	6.1	5.0	4.3	damb	8.0	đy	ŧ	đ.	ф	damb	Ą	0.1	dry	dry	1.0	фу	da Y	dry
79-26	20.7	20.0	10.9	8.7	1.5	3.3	0.3	ŧ	damb	damb	10.0	dr y	10.0	8.0	5.0	7.9	2.7	1.4	4.3
79-29	10.0	6.2	0.9	4.7	2.5	2.6	1.1	1.3	1.7	8.0	2.9	0.7	3.1	1.2	1.0	3.0	1.7	1.3	1.5
79-32	3.3	3.1	2.7	<u></u>	1.0	9.0	0.5	damb	no flow	no flow	1.3	damb	1.0	9.0	1.0	2.2	1.0	0.4	9.0
79-34	56.7	42.9	18.5	16.7	10.5	13.3	dry	Ą	0.3	damb	13.0	Ą	30.0	7.5	5.5	13.2	9.8	0.4	8.4
79-35	15.0	10.5	10.5	7.8	6.3	2.7	dry	1.9	4.3	4.4	8.9	0.5	3.0	4.5	9.8	4.6	5.0	2.7	4.5
79-38	10.9	9.2	4.7	3.6	8.3	10.0	1.1	7.8	6.5	2.3	6.4	0.5	10.0	7.5	4.0	7.5	9.0	4.0	3.3
79-40	15.0	8.3	5.6	4.7	2.0	5.4	dry	ą,	ą,	đ,	4.0	ф	2.0	0.5	4.1	2.0	1.7	da J	1.3
80-41	10.9	15.0	5.8	4.1	2.5	3.9	dry	da Y	Ą	dry	4.0	đ	2.4	0.5	4.5	5.4	3.7	13	4.8
80-43	24.0	20.0	9.9	3.1	0.4	<b>8</b> .	ę	£)	dry	dry	2.7	đ.	1.5	damb	damb	0.5	0.1	dry	Ą
80-44	24.0	13.1	5.5	2.2	ф	9.5	dry	đ.	đ	dr	1.4	Ę.	3.0	damb	0.2	0.5	0.1	0.5	0.5
80-46	0.09	28.3	18.2	12.0	4.0	6.7	Ą	Ą	ф	dry	7.5	Ą	9.0	damb	4.0	4.6	2.5	damb	2.1
80-47	20.0	15.0	12.5	12.2	7.4	6.6	4.6	2.0	1.3	3.3	13.3	2.2	12.6	5.0	9.5	10.5	9.8	5.0	9.4
82-51	10.0	5.9	3.8	5.6	damb	damb	dry	ŧ	0.1	damp	3.2	damb	3.0	0.5	2.0	2.1	0.7	0.1	1.3
82-52	80.0	48.0	32.1	23.3	20.1	21.5	2.6	13	1.0	1.0	16.7	2.0	15.0	7.0	12.0	12.0	12.0	3.4	8.0
84-56	<u>9.6</u>	6.3	4.7	3.7	2.5	2.9	9.1	1.0	0.5	9.0	1.0	0.3	1.0	0.3	0.7	1.7	6.0	0.2	0.8
Totals	1254.3	839.5	0.789	530.2	421.3	425.5	115.4	188.4	244.7	170.0	595.0	74.5	862.2	432.6	379.9	633.5	441.6	167.0	237.0

xx No measurement - utilized yearly comparison.



## Mode of Occurrence – East Mountain Springs Occurrences

Stratigraphic Location	Permeable fluvial channels that intersect the land surface	Flow along permeable strata underlain by impermeable	Contact of permeable beds and the Roans Canyon Fault	Mode of Occurrence not identified
		mudstone wnich intersects ne land surface	zone	
Base of Flagstaff		79-6, 79-7, <u>79-35,</u> 86-58, 89-	Sheba Springs, 79-1	
North Horn Formation	Ted's Tub, Burnt Tree		Elk Springs, 79-10, 79-18,	
	79-12, 79-13, 79-14, 79-15,		89-70	
	79-16, 79-17, 79-21, 79-22,			
	<u>79-26, 79-27, 79-28, 79-29,</u>			
	79-34, 79-39, 80-42, 80-43,			
	80-46, 80-47, 80-48, 80-53,			
	<u>84-56,</u> 86-59, 89-62, 89-63,			
	89-64, 89-65, 89-66, 89-67,			
	89-68, 89-71			
Base of North Horn Formation		79-23, 79-25, 79-32, 79-36, 79-37, 79-38, 84-55	79-30, 79-31	
Other Stratigraphic Horizons	Blackhawk Formation		Price River	Flagstaff Limestone
•	80-50, 84-57, 91-73		80-49,	79-4, 79-5, Pine Springs
			Blackhawk	Trough
	Price River Formation		91-72	Price River Formation
	Bear Canyon Fault Zone			79-24, 79-33, 79-40, 80-41,
	82-51			80-44, 80-45, 82-52, Jerk
				Water, 89-60 (Alpine)

TABLE 31: TEMPERATURE COMPARISON

		EAST MOUNTAIN DEPARTURE FROM NORMAL	ELECTRIC LAKE DEPARTURE FROM NORMAL	HUNTER PLANT DEPARTURE FROM NORMAL	HUNTINGTON PLANT DEPARTURE FROM NORMAL	
	1989 JAN	-2.1	-4.3	-7.8	4.8	
	FEB MAR	-3.5 5.7	-6.6	-1.4	-5.7	
	APR	6.0	8.1 6.9	9.5 9.5	3.8 5.7	
	MAY JUN	4.4 -4.5	4.0 -6.4	6.8 5.0	0.7 -1.8	
	1998 JAN	-2.4	-0.8	3.7	0.9	
	FEB WAR	-1.1 1.9	-4.9	5.2	-2.0	
	APR	2.1	7.0 6.3	8.7 10,9	2.6 4.6	
	MAY JUN	0. <b>8</b> 3.3	3.0 4. <b>8</b>	6.8 10.9	-1.3 1.0	
	1991 JAN	-1.9	-2.2	-4.5	-4.4	
	FEB MAR	5.8 -13.3	0.6	7.5	3.7	
	APR	-5.5	-2.5 -3.0	2.8 1.9	-5.8 -3.3	
	MAY JUN	-0.7 -1.2	-1.8 -0.6	5.1 7.7	-5.1 -2.8	
	1992 JAN	-0.4	0.8	-6.2	-1.6	
	FEB WAR	0.8 2.2	7.8 8.0	5,5	0.9	
	APR	4.9	11.8	8.5 12.6	2.9 \$.6	
	MAY JUN	4.5 -0.5	7.0 3.6	11.8 7.6	3.3 -3.3	
	1993 JAN	-3.8	2.7	0.9	-0.1	
	FEB WAR	-3.5 4.2	-2.9 -3.6	0.5 7.2	-4.3 -0.5	
	APR MAY	-2.2 4.1	0.1	4.4	-2.0	
	JUN	-3.9	2.8 -2.2	8.9 5.8	1.6 -4.1	
	1994 JAN	0.∎	2.3	-1.2	6.3	
	FEB WAR	-3.5 6.1	3.2 6.6	1.6 10.1	-3.5 5.0	
	APR WAY	0.0 4.6	6.0 7.2	4.7	0.2	
	JUN	9.1	4.8	8,9 13.4	2.7 5.4	
	1995 JAN	1.4	1.6	3.9	1.5	
- 1	FEB War	10.3 3.1	5.2 2.4	11. <b>8</b> 7.6	7,4 0.1	
	APR WAY	3.4 2.2	-0.1 -3.9	3.4 3.4	-2.0	
	JUN 1996	LI	-2.2	2.5	-5.5 -6.6	
	JAN	5.1	2.1	3.5	24	
,	FEB MAR	7.7 7.5	-0.9 0.6	8.4 7.8	1.6 1.5	
	APR WAY	3.0 8.5	2.6 3.6	5.4 8.0	1.1	
	JUN	8.5	5.2	9.6	1.2	
	1997 JAN	-0.9				
	FEB	0.5	1.6 -5.7	0.1 -2.3	0.3 -4.2	
	MAR APR	8.8 1.4	6.2 -0.7	8.1 3.2	2.2 -3.1	
	MAY JUN	0.0 4.6	4.2 4.9	10.5 8.9	3.5 -0.6	
,	998			•,	40.0	
	JAN FER	4.2 -1.5	2.0 -3.1	6.9	5.4	
i	WAR APR	6.4	2.1	4.6 5.7	-2.8 1.0	
-	WAY	0.6 5.0	-2.0 0.3	0.B 5.3	-2.9 -0.5	
	JUN	-2.3	-1.1	3.0	-6.1	
	19 <del>99</del> JAN	7.8	5.4	8.9	8.0	
	FEB WAR	4.7 7.4	-0.5 4.1	7,6	2.1	
,	APR WAY	-0.9 -0.4	-3.7	8.6 +1.8	6.7 -1.9	
	IUN	1.8	-1.0 0.2	4.9 6.3	-0.1 -3.1	
2	000					
	IAN FEB	2.5 4.4	3.6 -0.9	10.0 9.0	4.0 5.0	
	VAR APR	1.8 8.6	1.0 7.2	6.8 7.0	2.0	
	MAY IUN	9.2 5.8	7.4	11.0	5.9	
		2.0	3.3	6.0	2.6	
	IAN	-9.2	-2.6	1.3	1.0	
	FEB WAR	-11.5 -7.8	-2.0 4.4	1.0 9.0	-4.0 1.9	
á	APR MAY	-8.5 -3.9	3.0 6.5	2.2 9.5	-1.1	
4	IUN	-6.0 -7.8	3.7 2.2	9.0		
	EAR 982	EAST MOUNTAIN	ELECTRIC LAKE	5.3 HUNTER PLANT		OTAL
,	983		-2.8 -2.7	0.0 2.5	1.2 1.0	-0.5 0.3
1	984 985	3.1	-2.2 0.3	0.5 3.0	0.1 0.9	-0.5 1.8
,	984 987	2.9 1.7	3.4 -0.5	6.3 3.2	3.2 1.1	4.0
1	988 989	-0.2 0.0	-0.1 -0.1	3.5	0.5	0.9
1	990	2.3	1.8	4.1 7.3	0.3 1.2	1.1 3.2
1	99 <u>2</u> 992	-1.9 1.9	-1.4 6.5	3. <b>8</b> 6.6	-2.5 1.8	-0.5 4.2
1	993 994	-0.9 2.9	-0.5 5.0	4.6 6.3	-1.7 2.7	0.4
ı	995 996	3.6 6.7	0.5 2.2	5.4 7.1	-0.9 1.7	2.2 4.4
1	997 998	2.5 2.1	1.0 -0.3	4.8	-0.3	2.2
1	777 777 060	3.4	0.8	4.4 5.8	-1.0 2.0	1.3 3.0
	ee i	5.4 -7.8	3.6 2.2	8.9 5.3	43	5.6 -0.1

Table 32
EAST MOUNTAIN

#### SPRING DISCHARGE RECESSION STUDY YEAR 2001

SPRING		JUL	AUG	SEP	OCT
79-10	Flow (GPM)	10.3	5.7	5.1	3.2
	Temp. (C)	5.2	5.4	5.6	3.3
SHEBA	Flow (GPM)	2.9	2.2	1.7	1.0
SPRINGS	Temp. (C)	6.0	6.7	7.4	5.1
ELK	Flow (GPM)	131.0	85.0	73.0	67.0
SPRING	Temp. (C)	4.0	3.9	4.0	3.5
79-35	Flow (GPM)	4.5	2.5	2.0	1.6
	Temp. (C)	4.6	5.3	4.9	5.5
79-26	Flow (GPM)	4.3	2.4	2.0	1.6
	Temp. (C)	7.7	5.2	5.0	5.5
79-29	Flow (GPM)	1.5	1.4	1.4	1.0
	Temp. (C)	4.4	4.6	5.2	3.4
84-56	Flow (GPM)	0.8	0.5	0.5	0.4
	Temp. (C)	5.5	5.6	5.9	3.6
80-44	Flow (GPM) Temp. (C)	est. < 0.5 gpm	est.<0.5gpm	<0.5gpm	<0.5gpm
80-46	Flow (GPM)	2.1	2.3	1.0	Damp
	Temp. (C)	4.6	6.3	6.2	
BURNT	Flow (GPM)	5.6	5.3	10.0	6.0
TREE	Temp. (C)	5.4	6.6	7.0	5.6
79-23	Flow (GPM) Temp. (C)	dry	dry	dry	dry
82-52	Flow (GPM)	8.0	6.2	5.8	4.1
	Temp. (C)	4.1	4.5	4.2	4.3

TABLE 34: NEWUA - RILDA CANYON SPRING FLOW (GPM) MONTHLY MEASUREMENTS

	Mon	THLY MEASURI	EMENIS	
DATE	METER 2	METER 3	METER 4	TOTAL
09/06/1990	20	75	120	215
09/18/1990 11/07/1990	15.8	78.9	91	186
11/14/1990	13.3	37.5° 67.4	20 9.3	71 91
11-19-90**	13.6	57.7	6.3	91 78
04/08/1991	10.9	56.5	4.7	72
06/11/1991 07/17/1991	10.9 12.5	107 95	136	253.9
08/19/1991	9.3	95 95	160 160	267.5
09/10/1991	9.2	105	140	264.3 254.2
10/21/1991 11/20/1991	7.5	85	55	147.5
04/07/1992	8 8	80 46	16.2	104.2
05/18/1992	7.5	110	7.7 140	61.7 257.5
<i>06/12/1992</i>	7	100	180	287
07/20/1992 08/14/1992	7	80	150	237
09/03/1992	7.1 6	90 35	110 75	207.1
10/30/1992	5.5	45	2.6	116 53.1
05/13/1993	6	25	13	44
96/11/1993 97/29/1993	8.6 6	90	150	248.6
##/27/1993	4	110 96	170 170	286 270
119/28/1993	2	60	110	172
10/22/1993	3	30	55	88
#5/24/1994 #6/16/1994	4.6 5	65	75	144.6
07/18/1994	5.5	100 100	160 130	265 235.5
08/24/1994	2	70	80	152
09/13/1994	2.7	30	20	52.7
10/23/1994 12/14/1995	2 2	30 38	1.5	33.5
06/28/1995		over capacity	•••	40 -
07/21/1995	2	over capacity	***	
#8/24/1995 #9/15/1995	4	over capacity		
10/31/1995	2.3	150	NEWUA conducting maintenance	157.3
11/30/1995	3.3	75	*** maintenance	78.3
04/02/1996 05/17/1996	8	100	•••	108
03/17/1996 06/11/1996	5 5.5	175 175.0	***	180
07/23/1996	5.5	200.0	•••	180 205
08/21/1996	4.5	150.0	•••	154.5
09/16/1996 10/23/1996	4.5	150.0	•••	154.5
11/14/1996	3.8	80 80	•••	83.8
12/12/1996	7	100	•••	84 104
	1996 problems:	Valve seating affected	flow measurements	
	METER 2		_	NEWUA
04/28/1997	METER 2 5.2	METER 3 150	<i>TOTAL</i> + 150 ••••	METER 94.0 ****
05/29/1997	6	150	+ 150 ****	230
#6/25/1997 #7/17/1997	6	150	+ 150 ****	300
#8/26/1997	6 5.5	150 150	+ 150 **** + 150 ****	270 270
09/15/1997	5.5	150	+ 150 ****	270 270
				2/0
10/13/1997	5	150	+ 150 ****	180
10/13/1997 11/10/1997	3.9	100	+100.0 ****	160
10/13/1997				160 150
18/13/1997 11/18/1997 12/04/1997	3.9 4 METER 2	100	+100.0 ****	160
10/13/1997 11/18/1997 12/04/1997	3.9 4 <i>METER 2</i> 6.7	100 100 METER 3 100	+100.0 ****	160 150 NEWUA METER 120
14/13/1997 11/14/1997 12/04/1997 04/14/1998 05/27/1998	3.9 4 <i>METER 2</i> 6.7 7.5	100 100 <i>METER 3</i> 100 158	+100.0 ****	160 150 NEWUA METER 120 145
14/13/1997 11/18/1997 12/04/1997 04/14/1998 05/27/1998 04/08/1998	3.9 4 <i>METER 2</i> 6.7	100 100 METER 3 100	+100.0 ****	160 150 NEWUA METER 120 145 280
14/13/1997 11/18/1997 12/04/1997 04/14/1998 05/27/1998 05/08/1998 07/06/1998	3.9 4 METER 2 6.7 7.5 10.3 7.5 7.1	100 100 METER 3 100 158 +100.0**** +100.0****	+100.0 ****	160 150 NEWUA METER 120 145
14/15/1997 11/18/1997 12/04/1997 05/17/1998 05/27/1998 05/08/1998 08/18/1998 08/18/1998	3.9 4 METER 2 6.7 7.5 10.3 7.5 7.1 6.0	100 100 METER 3 100 158 +100.0 **** +100.0 **** +100.0 ****	+100.0 ****	160 150 NEWUA METER 120 145 280 300 300 240
14/13/1997 11/18/1997 12/04/1997 04/14/1998 05/27/1998 05/08/1998 07/06/1998	3.9 4 METER 2 6.7 7.5 10.3 7.5 7.1	100 100 METER J 100 158 +100.0 **** +100.0 **** +100.0 **** +100.0 ****	+100.0 ****	160 150 NEWUA METER 120 145 280 300 300 240 200
14/13/1997 11/12/1997 12/04/1997 05/27/1998 06/02/1998 07/06/1998 02/14/1998 11/05/1998	3.9 4 METER 7 6.7 7.5 10.3 7.5 7.1 6.0 6.0	100 100 METER 3 100 158 +100.0 **** +100.0 **** +100.0 ****	+100.0 ****	160 150 NEWUA METER 120 145 280 300 300 240
14/13/1997 11/14/1997 12/44/1997 04/14/1998 04/04/1998 04/14/1998 09/14/1998 11/04/1998 11/04/1998	39 4 METER 7 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7	100 106  METER 3 100 158 +100.0 **** +100.0 **** +100.0 **** +100.0 **** 172	+100.0 ****	160 150 NEWUA METER 120 145 280 300 300 240 200 180 150
14/13/1997 11/14/1997 12/44/1997 04/14/1998 04/04/1998 04/14/1998 09/14/1998 11/04/1998 11/04/1998	3.9 4 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0	100 106  METER 3 100 158 +100.0 **** +100.0 **** +100.0 **** +100.0 **** 172	*100.0 **** *100.0 **** ******************************	160 150 NEWUA METER 120 145 280 300 300 240 200 180 150
10/13/1997 11/14/1997 12/04/1997 04/14/1998 052/7/1998 0504/1998 07/04/1998 10/05/1998 12/05/1998	3.9 4 METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0 METER 2 5.0	100 100 METER 3 100 158 +100.0 **** +100.0 **** +100.0 **** +100.0 **** 172 95	+100.0 ****	160 150 NEWUA METER 120 145 280 300 300 240 200 180 150 NEWUA METER
10/13/1997 1/1/12/1997 1/1/12/1997 1/2/1/1998 05/2/7/1998 05/2/7/1998 05/2/7/1998 05/2/7/1998 1/05/1998 1/05/1998	3.9 4 METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.3	100 100  METER J 100 158 100.0 **** 100.0 *** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 ** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 ** 1	*100.0 ****  ****  ****  ****  ****  ****  ****	160 150 NEWUA METER 120 145 280 300 300 240 200 180 150
10/13/1997 11/14/1997 12/04/1997 04/14/1998 052/7/1998 0504/1998 07/04/1998 10/05/1998 12/05/1998	3.9 4 METER 2 6.7 7.5 10.3 7.3 7.1 6.0 6.7 5.0 METER 2 5.0 6.3 6.6	100 100 METER 3 100 158 +100.0 **** +100.0 **** +100.0 **** +100.0 **** 172 93 METER 3 120 90 80	+100.0 ****  *********  ******************	160 150 180 180 180 181 180 180 180 180 180 18
Int 1/1997 1/1/1997 1/1/1997 1/1/1/1998 0/1/1/1998 0/1/1/1998 0/1/1/1998 0/1/1/1998 1/1/1/1998 1/1/1/1999 0/1/1/1999 0/1/1/1999 0/1/1/1999 0/1/1/1999 0/1/1/1999	3.9 4 METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.3	100 100  METER J 100 158 100.0 **** 100.0 *** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 ** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 ** 1	*100.0 ****  ****  ****  ****  ****  ****  ****	160 150 NEWUA METER 120 145 280 300 240 200 180 150 NEWUA METER 120 120 110 120
14/1/1997 1/1/1997 1/2-6/1/1998 6/5/2/1/1998 6/6/6/1998 6/1/1998 6/1/1998 1/1/1998 1/1/1998 1/1/1998 1/1/1999 6/1/1/1999 6/1/1/1999 6/1/1/1999 6/1/1/1999 6/1/1/1999 6/1/1/1999 6/1/1/1999	3.9 4  METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.3 6.6 5.0 5.5	100 100  METER J 100 158 100.0 **** 100.0 *** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 ** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 ** 1	*100.0 ****  ****  ****  ****  ****  ****  ****	160 150 180 180 180 181 180 180 180 180 180 18
Int 1/1997 ITM/1997 ITM/1997 ITM/1998 0527/1998 06/04/1998 06/04/1998 ITM/1998 ITM/1998 ITM/1998 ITM/1998 ITM/1999 07/04/1999 07/04/1999 07/14/1999 07/14/1999 07/14/1999 07/14/1999	3.9 4 METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.3 6.6 5.0 5.5 6.6	100 100  METER J 100 158 100.0 **** 100.0 *** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 ** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *	*100.0 ****  ****  ****  ****  ****  ****  ****	160 150 NEWUA METER 120 145 280 300 300 240 200 180 150 NEWUA METER 150 110 120 130 240 250
INT M.1997 11/18/1997 12/84/1997 12/84/1998 05/27/1998 05/84/1998 05/44/1998 11/05/1998 11/05/1998 11/05/1998 11/05/1998 05/44/1999 05/14/1999 05/14/1999 05/14/1999 05/14/1999 05/14/1999 05/14/1999 05/14/1999 05/14/1999 05/14/1999 05/14/1999 05/14/1999 05/14/1999 05/14/1999 05/14/1999 05/14/1999 05/14/1999	39 4  METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.3 6.6 5.0 5.5 6.6 6.9	100 100  METER 3 100 105 100 100 1000 1000 1000 1000 172 95  METER 3 120 90 80 65 100 150 170 200	*100.0 ****  ****  ****  ****  ****  ****  ****	160 150 NEWUA METER 120 145 280 300 300 300 180 150 NEWUA METER 150 120 110 120 130 120 140 220 140 220 140 220
INT 1/1997 INT 1/1997 INT 1/1997 INT 1/1997 INT 1/1998 INT 1/1998 INT 1/1998 INT 1/1998 INT 1/1998 INT 1/1998 INT 1/1999	3.9 4 METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.3 6.6 5.0 5.5 6.6	100 100  METER J 100 158 100.0 **** 100.0 *** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 ** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *** 100.0 *	**100.0 ****  ****  ****  ****  ****  ****  ****	160 150 NEWTA METER 120 145 280 300 300 240 200 180 150 NEWTA METER 150 110 120 110 120 240 200 200 200 200 200 200 200 200 2
Int 1/1997 1/20/1/1998 0/2/1/1998 0/2/1/1998 0/2/1/1998 0/2/1/1998 0/2/1/1998 1/2/1998 1/2/1998 1/2/1998 0/2/1/1999	3.9 4 METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.3 6.6 5.0 5.5 6.6 6.9 6.7 6.0 4.0 3.2	100 100  METER J 100 158 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 172 95  METER J 120 90 80 65 100 150 170 200 200 100	*100.0 ****  ****  ****  ****  ****  ****  ****	160 150 NEWUA METER 120 145 280 300 300 300 180 150 NEWUA METER 150 120 110 120 130 120 140 220 140 220 140 220
INT 1/1997 INT 1/1997 INT 1/1997 INT 1/1997 INT 1/1998 INT 1/1998 INT 1/1998 INT 1/1998 INT 1/1998 INT 1/1998 INT 1/1999	39 4  METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.6 6.6 6.6 6.6 6.7 6.0 6.7	100 100  METER J 100 105 100 100 1000 1000 1000 1000 10	*100.0 ****  ****  ****  ****  ****  ****  ****	160 150 NEWUA METER 120 145 280 300 300 300 180 150 NEWUA METER 150 120 180 150 244 250 110 120 241 250 270 225
Int 1/1997 1/20/1/1998 0/2/1/1998 0/2/1/1998 0/2/1/1998 0/2/1/1998 0/2/1/1998 1/2/1998 1/2/1998 1/2/1998 0/2/1/1999	39 4  METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.6 6.5 6.6 6.6 6.6 6.7 6.0 4.0 3.2 2.5	100 100  METER J 100 158 100.0 **** 100.0 *** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 ** 100.0 **	**************************************	160 150 NEWUA METER 120 145 280 300 300 240 200 180 150 170 180 110 120 120 120 120 120 120 120 120 12
Int 1/1997 1/204/1997 1/204/1997 1/204/1997 0/21/1998 0/21/1998 0/21/1998 0/21/1998 1/204/1998 1/204/1998 0/21/1999 0/21/2000 0/21/2000	3.9 4  METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.3 6.6 6.9 6.7 6.0 6.7 6.0 6.0 6.2 2.2 3.4	100 100  METER J 100 158 100.0 **** 100.0 *** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 *** 100.0 *** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 10	*100.0 ****  ****  ****  ****  ****  ****  ****	160 150 NEWUA METER 120 145 280 300 300 240 200 180 180 1.50 NEWUA METER 150 110 120 241 250 270 242 251 200 130
Int 1/1997 1/12/1997 1/12/1/1998 05/1/1/1998 05/1/1/1998 05/1/1/1998 05/1/1/1998 05/1/1/1998 1/1/1/1999 05/1/1/1999	39 4  METER 2 6.7 7:5 7:1 6.0 6.0 6.7 5.0  METER 2 5.0 6.3 6.6 5.0 5.5 6.6 6.9 6.7 6.0 4.0 3.2 2.5 2.2 3.4	METER J 100 101 158 -100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 172 90 80 65 100 150 200 200 100 80	**IOO.0 ****  **TOTAL  123*  96*  87*  70*  106*  157*  177*  207*  206*  204  103  83  62.2*  56.4*  **	160 150 NEWUA METER 120 145 280 300 240 200 180 150 120 120 120 120 120 110 120 131 110 120 131 110 130 130 130 130 130 130 130 13
Int 1/1997 I/1/1997 I/1/1997 I/1/1998 I/1/1998 I/1/1998 I/1/1998 I/1/1998 I/1/1998 I/1/1998 I/1/1998 I/1/1999 I/1/1999 I/1/1/1999 I/1/1/1/1999 I/1/1/1/1999 I/1/1/1/1999 I/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1	3.9 4  METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.3 6.6 6.9 6.7 6.0 6.7 6.0 6.0 6.2 2.2 3.4	100 100  METER J 100 158 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 172 95  METER J 120 90 80 65 100 150 170 200 200 100 80 60 53	**100.0 ****  ****  ****  ****  ****  ****  ****	160 150 NEWT/A METER 120 145 280 300 240 200 180 150 NEWT/A METER 150 120 120 120 120 120 120 120 120 120 12
Int 1/1997 1/204/1997 1/204/1997 1/204/1997 0/21/1998 0/21/1998 0/21/1998 0/21/1998 1/20/1998 1/20/1998 1/20/1999 0/21/1999 0/21/1999 0/21/1999 0/21/1999 0/21/1999 0/21/1999 0/21/1999 0/21/1999 0/21/1999 0/21/1999 0/21/1999 0/21/1999 0/21/1999 0/21/1999 0/21/1999 0/21/2000 0/20/2000 0/20/2000 0/20/2000 0/20/2000	3.9 4  METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.3 6.6 5.0 5.5 6.6 6.9 6.7 6.0 4.0 3.2 2.3 3.4 4.4	METER J 100 101 158 -100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 172 90 80 65 100 150 170 200 200 100 80	**IOO.0 ****  **TOTAL  123*  96*  87*  70*  106*  157*  127*  207*  206*  204  103  83  62.2*  56.4*  ***  89*	160 150 NEWUA METER 120 145 280 300 240 150 150 120 150 120 120 110 120 241 250 270 221 110 110 120 110 110 120 130 241 250 270 225 130 110 110 120 130 130 130 130 130 130 130 130 130 13
Int 1/1997 ITM (1997 ITM (1997 ITM (1997 ITM (1998 OUT (1998 OUT (1998 OUT (1998 OUT (1998 ITM (1999 OUT (	3.9 4  METER 2 6.7 7.5 10.3 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0 6.3 6.6 5.0 5.5 6.6 6.9 6.7 6.9 6.7 6.0 4.0 3.2 2.3 3.4 3.3 2.1	100 100  METER 3 100 158 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 172 90 80 65 100 150 170 200 200 100 80 60 53 *** ** 86 160 170	**IOO.0 ****  **TOTAL  125*  96*  87*  70- 106* 157* 177* 207* 206* 204 103 83  62.2* 56.4*  *** *** *** *** *** *** *** *** ***	160 150 NEWT/A METER 120 145 280 300 240 200 180 150 NEWT/A METER 150 120 120 120 120 120 120 120 120 120 12
INT 1/1997 INT 1/1997 INT 1/1997 INT 1/1997 INT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 INT 1/1998 INT 1/1998 INT 1/1998 INT 1/1999 OUT 1/1999	39 4  METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.6 6.6 6.6 6.7 6.0 4.0 3.2 2.5 2.2 3.4 3 3 2.1 1.6	100 100  METER J 100 100 100 100 1000 1000 1000 1000 1	**100.0 ****  **TOTAL  **FOTAL  125- 96- 87- 70- 106- 137- 177- 207- 206- 204 103 83 62.2- 96.4- • • • • • • • • • • • • • • • • • • •	160 150 NEWT/A METER 120 145 280 300 240 200 180 150 NEWT/A METER 150 120 120 120 120 120 120 120 120 120 12
Int 1/1997 ITM (1997 ITM (1997 ITM (1997 ITM (1998 OUT (1998 OUT (1998 OUT (1998 OUT (1998 ITM (1999 OUT (	3.9 4  METER 2 6.7 7.5 10.3 7.3 7.1 6.0 6.0 6.7 5.0 6.3 6.6 5.0 5.1 6.6 6.9 6.7 6.0 4.0 3.2 2.3 3.4 3 3 2.1 1.6 1.2	100 100  METER 3 100 158 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 172 90 80 65 100 170 200 200 100 80 60 53 *** ** ** ** ** ** ** ** ** ** ** ** *	**IOO.0 ****  **TOTAL  125*  96*  87*  70- 106* 157* 177* 207* 206* 204 103 83  62.2* 56.4*  *** *** *** *** *** *** *** *** ***	160 150 NEWT/A METER 120 145 280 300 240 150 150 120 110 120 120 120 110 120 110 120 110 120 110 120 12
INT 1/1997 IT 1/1/1997 IT 1/1/1997 IT 1/1/1998 OS 27/1998 OS 27/1998 OS 27/1998 OS 27/1998 OS 27/1998 IT 1/1998 IT 1/1998 IT 1/1999 OS 27/1999	3.9 4  METER 2 6.7 7.5 10.3 7.3 7.1 6.0 6.0 6.7 5.0 6.1 6.6 5.0 6.5 6.6 6.6 6.9 6.7 6.0 4.0 3.2 2.3 3.4 3.3 2.1 1.6 1.2 1.7 1.4	100 100  METER J 100 100 100 100 1000 1000 1000 1000 1	**100.0 ****  **TOTAL  **FOTAL  125- 96- 87- 70- 106- 137- 177- 207- 206- 204 103 83 62.2- 96.4- • • • • • • • • • • • • • • • • • • •	160 150 NEWT/A METER 120 145 280 300 240 200 180 150 NEWT/A METER 150 120 120 120 120 120 120 120 120 120 12
INT 1/1997 INT 1/1997 INT 1/1997 INT 1/1997 INT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 INT 1/1998 INT 1/1998 INT 1/1999 INT 1/1999 OUT 1/1999	39 4  METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.6 6.0 6.7 6.0 6.7 6.0 4.0 3.2 2.5 2.2 3.4 4 4 4 4 4 1.1 1.1 1.6 1.2	100 100  METER J 100 101 102 102 103 104 105 106 107 107 107 107 107 107 107 107 107 107	**100.0 ****  **TOTAL  **TOTAL  125- 96- 87- 70- 106- 157- 177- 207- 206- 204 103 83  62.2- 56.4 89- 163- 172.1- 2016- 121.2- 51.7-	160 150 NEWT/A METER 120 145 280 300 240 200 180 150 150 150 120 120 120 120 120 120 121 120 130 130 110 120 120 120 120 120 120 120 120 12
INT 1/1997 IT 1/1/1997 IT 1/1/1997 IT 1/1/1998 OS 27/1998 OS 27/1998 OS 27/1998 OS 27/1998 OS 27/1998 IT 1/1998 IT 1/1998 IT 1/1999 OS 27/1999	3.9 4  METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.3 6.6 5.0 5.5 6.6 6.9 6.7 6.0 4.0 3.2 2.5 2.2 3.4 4.4 4.1 1.07	100 100  METER J 100 158 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 ** 100.0 ** 100.0 **	**IOO.0 ****  **TOTAL  123*  **96*  **87*  **70*  106*  157*  177*  207*  206*  204  103  **3  62.2*  56.4*  **  **  **  **  **  **  **  **  **	160 150 NEWT/A METER 120 145 280 300 240 200 180 150 150 NEWT/A METER 150 120 120 120 120 120 120 120 120 120 12
INT 1/1997 IT 1/14/1997 IT 1/14/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 IT 1/1998 IT 1/1998 OUT 1/1999 IT 1/17/1999 IT 1/17	3.9 4  METER 2 6.7 7.5 10.3 7.3 7.1 6.0 6.0 6.7 5.0 6.1 6.6 5.0 6.5 6.6 6.6 6.9 6.7 6.0 4.0 3.2 2.3 3.4 3.3 2.1 1.6 1.2 1.7 1.4	100 100  METER J 100 158 100.0 **** 100.0 *** 100.0 ** 100.0	**100.0 ****  *****  ******  *******  ********	160 150 NEWVIA METER 120 145 280 300 240 200 180 150 120 110 120 110 120 110 120 130 110 120 130 110 120 130 130 130 130 130 130 130 130 130 13
INT 1/1997 INT 1/1997 INT 1/1997 INT 1/1997 INT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 INT 1/1998 INT 1/1998 INT 1/1999 INT 1/1999 OUT 1/1999 OUT 1/1999 OUT 1/1999 OUT 1/1999 OUT 1/1999 OUT 1/1999 INT 1/1999	3.9 4 METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.6 6.5 5.0 5.0 6.6 6.6 6.7 6.0 4.0 3.2 2.5 2.2 3.4 4.4 4.7 1.3 3 2.1 1.6 1.2 1.7 1.4 1.07 1.02 Innecessible Innecessible Innecessible	100 100  METER J 100 158 -100.0 100.0 100.0 100.0 172 93  METER J 120 90 80 65 100 200 100 200 100 80 60 53 86 160 170 200 120 50 65 66 160 170 65 66 160 62.5	**IOO.0 ****  **TOTAL  125- 96- 87- 70- 106- 157- 177- 207- 206- 204 103 83  62.2- 56.4 *** 89- 163- 172.1- 201.6* 121.2* 51.7- 66.4- 62.1*	160 150 NEWT/A METER 120 145 280 300 240 150 150 120 110 120 130 120 130 110 120 130 130 110 120 130 130 130 130 130 130 130 130 130 13
INT 1/1997 IT 1/14/1997 IT 1/14/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 IT 1/1998 IT 1/1998 OUT 1/1999 IT 1/17/1999 IT 1/17	3.9 4  METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.3 6.6 6.9 6.7 6.0 4.0 3.2 2.3 2.2 3.4 3 3 2.1 1.6 1.2 1.7 1.4 1.07 1.02 Innecessible Innecessible 1.3	100 100  METER J 100 158 100.0 **** 100.0 *** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 *** 100.0 *** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 **	**100.0 ****  **TOTAL  **TOTAL  123- 96- 87- 70- 106- 157- 177- 207- 206- 204 103 83  62.2- 56.4 *** 89- 163- 172.1- 201.6- 212.2- 51.7- 66.4- 62.1- 63.52- 53.5	160 150 NEWT/A METER 120 145 280 300 240 200 180 150 150 120 120 120 120 120 120 120 120 120 12
Int 1/1997 I/1/1997 I/1/1997 I/1/1998 OS2/7/1998 OS2/7/1998 OS/1/1998 OS/1/1998 OS/1/1998 I/1/1998 I/1/1998 I/1/1998 I/1/1999 OS/1/1/1999 I/1/1/1999 I/1/1/1/1999 I/1/1/1/1999 I/1/1/1/1999 I/1/1/1/1999 I/1/1/1/1999 I/1/1/1/1999 I/1/1/1/1/1999 I/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1	3.9 4 METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.6 6.5 5.0 5.0 6.6 6.6 6.7 6.0 4.0 3.2 2.5 2.2 3.4 4.4 4.7 1.3 3 2.1 1.6 1.2 1.7 1.4 1.07 1.02 Innecessible Innecessible Innecessible	100 100 100 METER J 100 158 -100.0 10	**IOO.0 ****  **TOTAL*  123- 96- 87- 70- 106- 157- 177- 207- 206- 204 103 83  62.2- 56.4 *** 89- 163- 172.1- 201.6* 21.12* 31.7* 66.4- 62.1* 63.52*  53.5 141.9	160 150 NEWT/A METER 120 145 280 300 240 200 180 150 120 120 130 120 120 130 120 120 130 120 120 130 120 130 130 130 130 130 130 130 130 130 13
INT 1/1997 IT 1/10/1997 IT 1/10/1997 IT 1/10/1997 IT 1/10/1997 IT 1/10/1998 IT 1/1998 IT 1/1998 IT 1/1998 IT 1/1998 IT 1/1999	3.9 4 METER 2 6.7 7.5 6.7 7.5 7.1 6.0 6.0 6.7 5.0 6.3 6.6 6.0 5.0 5.0 6.6 6.7 6.0 4.0 3.2 2.5 2.2 3.4 4.4 1.07 1.02 Innecessable Innece	100 100 100 METER J 100 158 -100.0 100	**100.0 ****  **TOTAL  **TOTAL  123- 96- 87- 70- 106- 157- 177- 207- 206- 204 103 83  62.2- 56.4 *** 89- 163- 172.1- 201.6- 212.2- 51.7- 66.4- 62.1- 63.52- 53.5	160 150 NEWT/A METER 120 145 280 300 240 200 180 150 150 120 120 120 120 120 120 120 120 120 12
Int 1/1997 ITM/1997 ITM/1997 ITM/1998 OST/71998 OSM/1998 OSM/1998 OSM/1998 ITM/1998 ITM/1998 ITM/1998 ITM/1998 ITM/1998 ITM/1998 ITM/1999 OSM/1999 OSM/1999 OSM/1999 OSM/1999 OSM/1999 OSM/1999 OSM/1999 OSM/1999 OSM/1999 ITM/1999	3.9 4 METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.6 6.6 6.6 6.7 6.0 4.0 3.2 2.5 2.2 3.4 3 2.1 1.6 1.2 1.7 1.4 1.07 1.02 Innocessable Incessable I	100 100  METER J 100 108 100.0 *** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 10	**IOO.0 ****  **TOTAL  **FOTAL  123- 96- 87- 70- 106- 137- 177- 207- 206- 204 103 83  62.2- 56.4 *** *** *** *** *** *** *** *** *	160 150 NEWT/A METER 120 145 280 300 240 200 180 150 NEWT/A METER 150 120 110 120 120 120 120 120 120 120 12
INT 1/1997 IT 1/1/1997 IT 1/1/1997 IT 1/1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 OUT 1/1998 IT 1/1999 OUT 1/1999 IT 1/1/1999 IT 1/1/199	3.9 4 METER 2 6.7 7.5 6.7 7.5 7.1 6.0 6.0 6.7 5.0 6.3 6.6 5.0 5.0 6.6 6.7 6.0 4.0 3.2 2.5 2.2 3.4 3 3 2.1 1.6 1.2 1.7 1.07 1.02 Innecessible 1.5 1.9 1.6 1.2 1.1	100 100 100 METER J 100 158 -100.0 100	**IOO.0 ****  **TOTAL  123*  96*  87*  70- 106* 157* 177* 207* 206* 204 103 **3  62.2* 56.4*  **  **  **  **  **  **  **  **  **	160 150 NEWT/A METER 120 145 280 300 240 150 150 120 150 120 110 120 131 110 120 131 110 120 131 110 120 131 100 130 130 130 130 130 130 130 13
Int 1/1997 ITM/1997 ITM/1997 ITM/1998 OST/71998 OSM/1998 OSM/1998 OSM/1998 ITM/1998 ITM/1998 ITM/1998 ITM/1998 ITM/1998 ITM/1998 ITM/1999 OSM/1999 OSM/1999 OSM/1999 OSM/1999 OSM/1999 OSM/1999 OSM/1999 OSM/1999 OSM/1999 ITM/1999	3.9 4 METER 2 6.7 7.5 10.3 7.5 7.1 6.0 6.0 6.7 5.0  METER 2 5.0 6.6 6.6 6.6 6.7 6.0 4.0 3.2 2.5 2.2 3.4 3 2.1 1.6 1.2 1.7 1.4 1.07 1.02 Innocessable Incessable I	100 100  METER J 100 108 100.0 *** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 **** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 100.0 ** 10	**IOO.0 ****  **TOTAL  **FOTAL  123- 96- 87- 70- 106- 137- 177- 207- 206- 204 103 83  62.2- 56.4 *** *** *** *** *** *** *** *** *	160 150 NEWT/A METER 120 145 280 300 240 200 180 150 NEWT/A METER 150 120 110 120 120 120 120 120 120 120 12

#### TABLE 35 NEWUA - RILDA CANYON SPRINGS AVERAGE WATER QUALITY\*

PARAMETER **	ME	CTER 2	MI	ETER 3	ME	TER 4
	2001	Historical	2001	Historical	2001_	Historical
				-		
Bicarbonate	442	434	390	395	Combined with Meter 3	356
Calcium	89.0	88.4	74.3	77.4	in 1995	70.3
Carbonate	<1	1.8	<1	2.1		0.7
Chloride	8.5	11.2	6.9	10.3		13.1
Cond.(umhos/cm)	954	767	804	675		535
Hardness	438	431	376	382		348
Iron	<0.1	0.13	<0.1	0.10		0.13
Magnesium	52.50	51.10	46.30	45.77		41.90
Mangenese	<0.1	0.11	<0.1	0.08		0.08
pH(units)	7.20	7.28	7.30	7.39		7.40
Potassium	3.00	2.65	2.00	1.96		2.13
Sodium	19.50	15.40	16.33	13.91		12.96
Sulfate	132.0	95.6	96.1	76.7		55.4
TDS	584	485	442	425		365

Quality parameters reported as mg/l unless otherwise noted
 Data: Database input restricted to values greater then laboratory minimum detection limit.
 Flow through Meter 4 was combined with Meter 3 in 1995

Table 36 TRAIL MOUNTAIN

#### SPRING DISCHARGE RECESSION STUDY YEAR 2001

SPRING		JUL	AUG	SEP	ОСТ	Seasonal Net Change %
T-6	Flow (GPM)	4.8	2.2	1.7	1.0	-79.2
18-2-1	Temp. (C)	10	9	8	7	
T-8	Flow (GPM)	0.4	0.3	0.3	0.3	-31.6
17-21-1	Temp. (C)	13	10	10	6 .	
T-9	Flow (GPM)	6.0	3.3	3.0	1.5	-75.0
17-22-1	Temp. (C)	8	6	6	6	
T-10	Flow (GPM)	0.2	0.2	0.2		
17-26-4	Temp. (C)	15	7	7	0.0	
T-14	Flow (GPM)	0.5	0.5	0.5		
17-25-1	Temp. (C)	16	9	9	0.0	
T-14A 17-26-5	Flow (GPM) Temp. (C)	0.0	0.0	0.0	0.0	
T-15 17-35-1	Flow (GPM) Temp. (C)	0.0	0.0	0.0	0.0	
T-16 17-35-2	Flow (GPM) Temp. (C)	0.0	0.0	0.0	0.0	
TM-23*	Flow (GPM) Temp. (C)	0.0	0.0	0.0	0.0	
TOTAL I	JULY TOTAL FOR JULY 2001 =	11.9 11.9		OCTOBEI Net Change - Net Change -	Average	<b>2.76</b> -61.92 -76.77

TOTAL FOR JULY 2001 = 11.9 JULY 2001 74% LOWER THAN JULY 2000

TABLE 37: TRAIL MOUNTAIN YEARLY SPRING DISCHARGE VARIATIONS (GPM)

## JULY FLOW DATA

						***								
Spring	1988	1989	0661	1661	1992	1993	1994	1995	9661	1661	8661	6661	2000	7007
T-6 (18-2-1)	=	0.5	0.5	1.2	0.03	9	1.6	4.1	3.3	7.5	8.6	3.5	3	4.8
T-8 (17-21-1)	4.7	0.2	0.25	Dry	0.14	1.7	0.2	1.7	9.0	6.0	2.1	1.4	9.4	9.4
T-9 (17-22-1)	œ	0.2	0.1	Dry	2.5	40	4	20	9.8	<b>4</b> .8	24	6.01	2.7	9
T-10 (17-26-4)	4.7	Dry	0.15	Dry	Day	0.4	Damp	4.0	0.2	0.4	0.5	0.7	0.3	0.2
T-14 (17-25-1)	\$	Dry	Dry	Dry	Dry	1.6	Damp	7	6.0	-	2.1	2.1	0.3	0.5
T-14A (17-26-5)	10	Dry	Dry	Damp	Dry	0								
T-15 (17-35-1)	2.1	0.2	0.5	0.75	0.33	9.1	0.5	1.2	8.0	_	3.3	2.3	6.0	0
T-16 (17-35-2)	Dry	Damp	Damp	Dry	0									
T-23 (17-14-4)	22**	4.0*	Dry	57.8****	84.4	39.7	0							
TOTAL	67.5	5.1	1.5	1.95	2.67	51.3	6.3	29.4	14.4	15.6	9.66	105.3	47.2	11.9
* A														

<sup>\*</sup> August measurement

\*\* September measurement

\*\*\* First year monitored by PacifiCorp

\*\*\*\* Cottonwood Creek Gain/Loss Survey - November 10, 1998

			Table 38:	Frail Moun	tain Spring	. Water Qual	Table 38: Trail Mountain Springs Water Quality (Historical vs. 2001) *	al vs. 2001)	*		
	18-2-1		17-21-1	Ξ	_	17-22-1	17.	17-26-4	17.5	17-25-1	
PARAMETER	Historical	2001	Historical	2001	Historical	2001	Historical	2001	Historical	2001	
Elevation	8395		9320	-		9210	88	08	8155	55	
Geologic	TKn		TKn			TKn	Ţ	TKn	Kcg	80	
Formation	403	400	399	397	336	303	398	403	537	700	
Calcium	0.19	62.0	53.0	52.0	48.0	41.0	55.1	52.0	88.2	116.0	
Carbonate	1.48	\$	1.53	\$	3.41	\$	8.33	\$	3.50	\$	
Chloride	46.0	46.7	31.0	16.3	10.7	6.9	28.6	34.0	31.4	34.1	
Cond.(umhos/cm)	938	1238	703	872	550	603	707	968	1157	1378	
Hardness	383	394	244	239	264	230	334	323	481	553	
Iron	0.11	<0.1	0.11	<0.1	0.11	<0.1	0.11	<0.1	0.13	<0.1	
Magnesium	26.00	28.00	28.02	26.50	35.01	31.00	47.50	47.00	59.05	64.00	
Mangenese	0.05	<0.1	90:0	<0.1	90:0	<0.5	0.11	<0.1	0.50	09'0	
pH(units)	7.67	7.28	7.63	7.00	7.72	7.57	8.03	8.00	7.85	7.84	
Potassium	1.70	⊽	2.10	2.00	1.67	<0.1	1.75	3.00	2.31	2.00	
Sodium	66.32	71.00	61.20	63.50	21.94	16.00	33.29	34.00	68.75	30.00	
Sulfate	134.2	196.0	18.0	18.4	20.4	12.0	33.1	30.0	227.3	30.0	
TDS	576	648	396	401	304	257	397	436	720	782	
	17-35-1		17-35-2	-7	11	17-14-4		TRAIL	TRAIL MOUNTAIN SPRINGS	SUNCS	
PARAMETER	Historical	2001	Historical	2001	Historical	2001		5	CROSS REFERENCE	ы	
Elevation	8880		0006			880		ARCO'S		ENERGY WEST	
Geologic	TKn		TKn		IF	Alluvium					
Formation								T-6		18-2-1	
Bicarbonate	388	ž	Š	%	363	% V		T-8		17-21-1	
Calcium	41.6	Flow	Historical	Flow	629	Samples		T-9		17-22-1	
Carbonate	5.71	During	Flow	During		During		T-10		17-26-4	
Chloride	42.47	2001		2001	13.91	2001		T-14		17-25-1	
Cond.(umhos/cm)	770				641			T-15		17-35-1	
Hardness	251				346			T-16		17-35-2	
Iron	0.48				0.19			TM-23		17-14-4	
Magnesium	36.30				43.95						
Mangenese	80.0				0.02						
pH(units)	8.00				77.7						
Potassium	1.55				1.95						
Sodium	80.00				15.83						
Sulfate	45.2				8.19						
TDS	441				385						
Spring 17-26-5 Removed - No Evidence of Spring	Evidence of Spring										
* Quality parameters reported as mg/l unless otherwise noted	as mg/l unless otherwise note	9									
THIGH ISS, Elevated Lotal Iron	ron										

# TABLE 39: DEER CREEK IN-MINE WATER QUALITY \*

2001*** SAMPLE DATES	ALKALINITY BICARBONATE	CALCIUM	CALCIUM CARBONATE CHLORIDE		CONDUCTIVITY (umhos/cm)	HARDNESS	IRON DISSOLVED	MAGNESIUM MANGANESE PH (units) POTASSIUM SODIUM SULFATE	MANGANESE	PH (units)	POTASSIUM	SODIUM	SULFATE	TDS
TW-10														
20010328	381	89		4	732	318		36		7.19	_	14	42	338
20010926	391	89		4.6	712	322		37		7.32		15	44.6	365
20011217	375	69		3.9	641	321		36		7.3		14	45.7	360
2001***														
MIN	375	89		4	641	318		36		7.19	1.00	14	42	338
MAX	391	69		5	732	322		37		7.32	1.00	15	. 46	365
MEAN	382	89		4	969	320		36		7.27	1.00	14	44	354
No. of Analysis	ъ	т	e	3	က	8	æ	3	3	3	3	ю	æ	æ
HISTORICAL 1988-2000	0													
MIN	279	61.3	0.1	0.4	450	279	0.01	18.70	0.01	09.9	0.01	9.81	27.00	313
MAX	714	211.0	5.0	30.0	950	732	1.17	77.10	1.21	8.40	2.00	55.03	350.00	505
MEAN	385	9.62	1.6	8.5	919	355	0.17	36.10	0.00	7.42	1.43	15.78	52.73	378
MN-ME"														
20010328	470	66		9	1002	461		52		7.54	ĸ	81	128	528
20010926	462	101		7	966	475		54		7.89	m	19	135.9	562
20011217	464	101		6.4	200	466		52		7.76	33	18	141.2	563
2001***														
MIN	462	0.66		9	206	461		52.00		7.54	3.00	18.0	128	528
MAX	470	101.0		7	1002	475		54.00		7.89	3.00	19.0	141.2	563
MEAN	465	100.3		6.5	896	467		52.67		7.73	3.00	18.3	135.0	551
No. of Analysis	Э	3	æ	es	т	e	ო	· •	m	æ	33	3	33	3
HISTORICAL 1991-2000														
MIN	355.0	0.69	0.1	4	200	329	0.01	38.00	0.01	6.90	0.74	15.0	40	240
MAX	469	100.0	5.0	25.0	897	441	2.81	50.00	0.20	7.99	14.00	37.16	118.0	999
MEAN	424	86.7	2.0	6.8	755	398	0.26	43.90	0.07	7.57	3.12	18.86	87.8	464

Quality parameters are reported as mg/l unless otherwise noted.
 Sample site intiated during 1991.
 1997 Data: Database input restricted to values greater than laboratory minimum detection limit.

TABLE 40: DEER CREEK MINE - DISCHARGE WATER QUALITY\*

		2001**	*		H	Historical - (1976-2000)	1976-200	<b>Q</b>
				No. of				No. of
Parameters	Minimum	Maximum	Mean	Analysis	Minimum	Maximum	Mean	Analysis
pH (units)	7	7.3 7.14 1	7.14	12	92.9	8.51	7.55	316
Acidity				12	0.1	26	13.2	265
Chloride	7.1	19	11.75	12	0.7	285	20	297
Conductivity (umhos/cm)	705	1042	905	13	480	1900	922	310
Iron (total)	0.1	2.1	0.72	13	0.01	7.53	9.0	306
Oil & Grease	Visal Observation	on - No Sample	s During 20	101	0.1	48.8	3.21	238
Sulfate	79.8	117	93.9	12	13	518	506	305
Saz	369	603	467	13	289	1111	809	316
TSS	ς.	15	9.78	6	0.1	2784	58	307

Quality parameters reported as mg/l unless otherwise noted.
 \*\* Database input restricted to values greater than laboratory minimum detection limit.

# TABLE 41: WILBERG/COTTONWOOD IN-MINE WATER QUALITY \*

2001**														
SAMPLE	ALKALINITY				CONDUCTIVITY		IRON							i
2S XC-11	BICARBONALE	CALCIUM	CALCIUM CARBONAIE CHLORIDE	CHLORIDE	(nmhos/cm)	HAKDNESS	DISSOLVED	MAGNESIUM	MANGANESE PH (units) POTASSIUM SODIUM SULFATE	PH (units)	POTASSIUM	SODIUM	SULFAIE	Sal
20010309	632	165		13	1729	848		106		7.11	4	22	460	1124
2001**														
MIN	632	165		13	1729	848		106		7.11	4.00	22	460	1124
MAX	632	165		13	1729	848		106		7.11	4.00	22	460	1124
MEAN	632	165		13	1729	848		106		7.11	4.00	22	460	1124
No. of														
Analysis	_	_		-	_		_	1				-	_	_
HISTORICAL 1983-2000	L 1983-2000													
MIN	403	116.0	0.1	0.9	1000	725	0.01	5.40	0.01	6.50	0.30	5.80	250.0	664
MAX	9/9	330.0	5.0	160.0	2600	1022	0.30	134.40	0.20	8.07	7.40	36.90	0.069	1328
MEAN	564	171.0	1.6	20.5	1491.0	867.0	0.11	105.49	0.05	7.25	4.22	22.58	411.2	1049
TMA XC-32														
20010309	450	104		11	1273	543	0.2	69		7.01	∞	41	306	170
20010418	448	107		=	1220	543		<i>L</i> 9		7.07	<b>∞</b>	42	213	761
20010504	439	901		11	1440	553	0.3	70		7.15	<b>∞</b>	41	259	757
2001**														
MIN	439	104		11	1220	543		<i>L</i> 9		7.01	∞	41	213	757
MAX	450	107		11	1440	553		70		7.15	œ	42	306	770
MEAN	446	106		11	1311	546		69		7.08	8.0	41	259	763
No. of														
Analysis	က	e	က	က	3	က	m	3	က	က	က	n	m	m
HISTORICAL 1983-2000	L 1983-2000													
MIN	379	114	_	7	1171	581	0.10	72	0.10	7.03	9	33	256	816
MAX	467	133	'n	17	1352	889	0.70	06	0.20	8.20	10	44	491	993
MEAN	440	121	4	12	1254	616	0.25	9/	0.11	7.30	7	39	347	880
* Onality narameters	rameters are renorts	selan Van se be	se otherwise noted	-										

<sup>\*</sup> Quality parameters are reported as mg/1 unless otherwise noted.

<sup>\*\* 1997</sup> Data: Database input restricted to values greater then laboratory minimum detection limit. MINED SEALED MAY 2001 - SAMPLING TERMINATED

TABLE 42: WILBERG/COTTONWOOD - DISCHARGE WATER QUALITY

			G	GRIMES WASH				
		20	2001		His	Historical - (1976-2000)	(1976-20	(00
	Min	Max	Mean	No. of Analysis	Min	Max	Mean	No. of Analysis
hН	7.4	8.27	7.94	ν,	6.9	8.47	7.7	267
Acidity				\$		62	10.61	193
Bicarb. Alkalinity	347	366	356	\$		539	365	168
Chloride	11	38	28.4	5		80	11	242
Conductivity	1215	1611	1432	5		1590	1032	200
Iron	0.5	0.5	0.5	5		3	0.33	232
Oil & Grease	Visal Obser	/ation - No S	amples Dur	ing 2001		23.8	2.3	193
Sulfate	337	406	363	5		009	797	244
TDS	807	988	826	s	407	1287	899	268
TSS						222	7.8	797

### MILLER CANYON

		7	2001		His	Historical - (1984-2000)	1984-20	9
	i		No. of	No. of				No. of
	E.	Max	Mean	Analysis	Min	Max	Mean	Analysis
Hq	_	No Discharge During 2001	e During 20	100	6.4	8.83	7.3	8
Acidity					0.1	<u>8</u>	22.45	72
Bicarb. Alkalinity					267	543	408.7	79
Chloride					10	155	22.14	11
Conductivity					480	1900	1216	81
Iron					10.0	1.38	0.24	79
Oil & Grease					0.1	7.2	2.1	71
Sulfate					200	089	419.3	79
TDS					413	1182	976	8
TSS					0.1	32	8.4	109

#### TMA001

Historical - (2001)

No. of

Min Max Mean Analysis

Discharge Re-located From Grimes Wash July 2001

		2	2001	
	Min	Max	Mean	No. of Analysis
=	7.23	80.8	7.84	7
Acidity				7
icarb. Alkalinity	376	409	395	7
Chloride	23.5	34.2	26.1	7
Conductivity	1127	1436	1240.7	7
Iron	0.1	0.1	0.1	7
Oil & Grease	Visal Obser	'isal Observation - No Samples During 2001	Samples Du	ring 2001
Sulfate	290	322	300	7
TDS	753	803	176	7
TSS				7

TABLE 43: TRAIL MOUNTAIN IN-MINE WATER QUALITY \*

2001** SAMPLE DATES	ALKALINITY BICARBONATE CALCIUM CARBONATE CHLORIDE	CALCIUM	CARBONATE	CHLORIDE	CONDUCTIVITY (umhos/cm)	HARDNESS	IRON DISSOLVED	IRON HARDNESS DISSOLVED MAGNESIUM MANGANESE PH (units) POTASSIUM SODIUM SULFATE	ESE PH (units	POTASSIUM	SODIUM	SULFATE	TDS
UG-3 20010309	319	36		12	647	209		29	8.07	4	41	40	319
2001** MIN	319	36.0		12	647	209		29	8.07	4	41	40	319
MAX	319	36.0		12	647	500		29	8.07	4	41	40	319
MEAN	319	36.0		12	647	209		29	8.07	4	41	40	319
No. of													
Analysis		-	_	-	1	-	-	1	-	-	-	_	
HISTORICAL 1985 - 2000	1985 - 2000												
MIN	260	26.0	0.1	2	380	151	0.03	20 0.03	7.41	2.10	33	15	252
MAX	344	49.3	25.0	91	969	222	0.20	29 0.20	8.48	5.00	19	130	424
MEAN	305	34.1	7.3	6	540	189	0.12	25 0.10	8.09	3.60	46	34	308
* Quality para	* Quality parameters are reported as mg/l unless otherwise noted	as mg/l unless o	otherwise noted.										
** Data: Datab	** Data: Database input restricted to values greater then laboratory minimum detection limit.	o values greate:	r then laboratory	minimum detec	tion limit.								

TABLE 44: TRAIL MOUNTAIN - DISCHARGE WATER QUALITY

#### @ COTTONWOOD CANYON PORTALS

		20	)01			Hist	orical	
	Min	Max	Mean	No. of Analysis	Min	Max	Mean	No. of Analysis
pН	7.85	8.45	8.22	5	7.8	8.53	8.26	60
Acidity				4				44
Bicarb. Alkalinity	341	477	437	4	555	922	782	44
Chloride	25	37	29	4	10	410	37.2	45
Conductivity	1230	1507	1319	6	116	1655	1481	49
Iron	0.3	0.3	0.3	6	0.3	2.3	0.57	65
Oil & Grease	Visal Obser	vation - No	Samples D	uring 2001	2	2	2	4
Sulfate	131	292	188	4	50	277	150	44
TDS	671	825	707	6	682	1072	957	64
TSS	5	5	5	6	5	42	11.1	35

#### **OLIPHANT PORTALS**

		20	001			Hist	orical	
	Min	Max	Mean	No. of Analysis	Min	Max	Mean	No. of Analysis
pН	7.66	7.88	7.76	3	7.54	8.91	8.13	42
Acidity	7	7	7	3	1	10	6.25	12
Bicarb. Alkalinity	280	285	283	3	214	327	282	42
Chloride	6	6.7	6.2	3	4	21	8.42	42
Conductivity	699	776	729	3	482	925	658	39
Iron	< 0.5	< 0.5	< 0.5	3	0.01	0.7	0.16	23
Oil & Grease	Visal Obser	rvation - No	Samples Di	uring 2001	0.4	5	4.4	8
Sulfate	124	127	126	3 .	90	330	123	42
TDS	382	415	394	3	354	584	411	42
TSS	<5	<5	<5	3	1	90	22.6	23

TABLE 45: WELLS - WATER QUALITY \*

2001** SAMPLE	ALKALINITY				CONDUCTIVITY		IRON							į
DATES	BICANBONALE	CAECIOM	CARBONALE	CHLONIDE	(amnos/cm)	HARDINESS	DISSOLVED MAGNESIUM		MANGANESE	FH (units)	FOLASSIUM	SODIOM	SULFAIE	SI
						DEER CREEK - DCWR-1	. DCWR-1							
20010314	908	Ξ		792	23100	766		175		77.77	13	5810	12167	18622
20010629	802	01:		570.6	23500	942		162		7.66	13	5720	7559	18400
20010917	805 787	171		77.7	22050	1023		175		17.7	4 :	5850	11447.3	18112
2001**	761	<u> </u>		6.12	00707	434		601		C/-/	<u>*</u>	2300	0.00011	19004
MIN	792	70		27	20,200	939		162		7.66	13	5,360	7.559	18,064
MAX	908	121		792	23,500	1023		175		17.7	14	5,850	12,167	18,622
MEAN	801	112		540	22,213	975		169		7.72	14	5,685	10,710	18,300
No. of Analysis	4	4	4	4	4	4	4	4	4	4	4	4	4	4
HISTORICAL 1989-2000:														
MIN	979	==	0	1.1	17,300	546	0.05	47	10.0	7.34	=	5,165	6,000	11,466
MAX	935	880	15	1140	45,000	3351	1.74	351	0.20	8.21	44	8/6'6	18,000	24,189
MEAN	775	199	2	780	23,854	1390	0.30	216	0.07	7.74	61	6,670	12,937	20,726
					WILB	ERG/COTTONY	WILBERG/COTTONWOOD - WCWR-1							
20010309	283	281		2414	15630	2937		543		7.58	21	2660	5772	11524
20010626	289	250		1294	15265	2510		458		7.66	70	2415	3514	10663
20010920	353	308		2528.6	18255	3281		610	90.0	7.68	27	3175	6434	13108
20011213	362	315		2387.9	16290	3340		620		7.73	25	3175	7219.5	14061
2001**	600	030		700	370 31	0					i d			2,
MIN	583	230		1294	15,265	2510		828		85.7	20.0	2,415	3,514	10,663
MAA	795	313		6757	18,233	3340		079		1.13	27.0	3,175	7,220	14,061
MEAN	775	687		2136	16,360	3017		866		7.66	23.3	2,856	5,735	12,339
No. of Analysis	4	4	4	4	4	4	4	4	4	4	4	4	4	4
HISTORICAL 1989-2000:			•					•	;	,	;	į		
MIN	233	132	o <u>S</u>	280	10,666	1629	0.05	138	0.02	6.90	0.8	851	750	8,492
MERAN	100	ceri ceri	2,	4070	000,021	8327	9.6	/1/1	2.48	6.33	119.1	8,812	24,000	30,440
MEAN	414	202	4	6617	23,338	7786	0.75	/69	0.20	697	30.9	4,517	9,044	1,1,1
					•	d Me Misterior in de	di Mirini							
20010309	469	9		30	010	MAIL MOUNT	GI-WI NIN	2		9 36	·	17.	7	481
20010626	460	: 0		36	896	62		2 0		8.51	. 6	174	٧.	467
20010920	453	6		39.5	974	09		. 6		8.66	2	178	4.3	515
20011213	463	01	9	37	827	62		6		8.55	7	175	3.4	480
2001**	į													
WIN	453	σ;		36	827	09		0.6		8.36	2.0	172	۳.	467
MAX	469	0		9	974	99		10.0		8.66	2.0	178	7	515
MEAN	461	0		38	920	63		9.3		8.52	2.0	175	v	486
No. of Analysis	4	4	4	4	4	4	4	4	4	4	4	4	4	4
HISTORICAL 1985-2000:		·	٠	,		,	:	;	į	,	;	,	,	!
WIN.	304	2.4	}	9:	790	۲.	0.05	0.1	0.01	8.20	0.1.	\$	7	450
MEAN	5101	0.47	<u>z</u> :	7.	4,580	7 :	0.20	10.7	0.20	55.6	15.7	1,316	400	3,290
MEAN	710	0.7	\$	<u>.</u>	د/درا	4	9.14	ø.ø	0.08	8.33	7.5	317	74	179

Quality parameters are reported as mg/l unless otherwise noted.
 Data: Database input restricted to values greater than laboratory minimum detection limit.

Record	Unpublish Record										<u>.</u>		
			1.00		1. A. A. A. A. A.	*							NOICES.
24.7°C.	-				零	mis.				1			1
6.240	3076	2 100	-943	-277	3,632	612	-338	-344	417	-335	-295	-30%	Change
21.035	17.387	19,687	20.691	21,035	20,964	17,197	16.925	17.283	11/1/1	18,000	10,00	360	900
13.411	13411	17,488	19,748	20,694	17.332	46.540	16.587	16.939	17.294	627.71	270,01	0.773	Max
18,105	15.285	18,726	20.273	20,915	19,350	16,665	16.714	17.109	17.498	57.71	18.072	18 373	Min
Vearly Totals						Totals	Monthly Totals			350	0000	10 657	Mean
31		1 /488	17/40		5000								
30	13411	17620	19/8/	20074	20064		16587		17294	17725		18373	31
29	13498	/1//1	10701	2000	20054	17197	16590		17309	17740	18072	18382	30
28	13578	1/808	1001	20724	20906	17073	16596		17320	17755	18087	18388	29
27	13668	806/1	19923	20730	20872	16922	16599	16939	17335	17770	18099	18397	28
26	13768	18001	19981	20271	20805	16840	10991	16951	17349	17787	18114	18406	27
25	13864	18090	70007	20/88	20720	16758	16604	16962	17361	17802	18129	18412	26
24	13982	18198	20017	70877	20091	16711	16607	16076	17375	17817	18141	18421	25
23	14110	18291	20069	20832	71507	10/02	16612	16088	17390	17832	18156	18427	24
22	14232	18376	20102	20835	20434	16702	10018	17007	17401	17846	18171	18436	23
21	14355	18467	20141	20866	20341	10003	10071	12013	17416	17861	18183	18446	22
20	14476	18540	20180	20889	20193	16632	10032	17025	17477	17876	18198	18455	21
19	14585	18619	20210	20903	20040	165/9	00001	0007	12442	17801	18210	18467	20
<u>∞</u>	14746	18690	20246	20920	19881	16557	1699	7007	17466	179051	18225	18482	19
17	14921	18767	20275	20933	19678	16551	16699	0/0/	17460	17020	18234	18497	00
91	15074	18847	20308	20940	19432	16540	16/08	060/	17497	17025	18240	18518	17
15	15254	18881	20335	20954	19246	16557	16714	701/1	17407	17050	18240	18540	16
14	15442	18927	20364	20981	19064	16565	16/22	1/113	5757	17066	19766	18561	3
13	15636	19002	20411	21005	18909	16579	16/30	871/1	17503	17000	18261	18583	14
12	15813	19030	20421	21001	18708	16604	16/39	17139	00071	17005	18273	18604	13
=	16011	19089	20461	20984	18515	16621	16/44	1/133	17660	01001	18270	18625	12
10	16178	19155	20500	20998	18327	16621	16753	501/1	6/6/1	19013	18788	18647	=
٥	16321	19208	20520	20998	18144	16610	19291	17176	17593	19015	10201	00001	١
\ a	16479	19268	20520	21011	18004	10991	16801	17191	809/1	19016	19303	18600	0
0 -	16621	19312	20547	21008	17947	16590	90891	17202	17623	18021	18318	10711	~ a
3	10903	10382	20554	21018	17879	16582	16826	17217	17637	18024	18327	07/81	0 1
4	17042	10422	20560	21032	17796	16571	16849	17228	17652	18027	18333	18724	^
3	17153	1960	20630	21035	17743	16573	16888	17243	17667	18033	18343	18730	4
2	17266	19033	20000	21005	17664	16576	16900	17254	17681	18039	18349	18733	3
_	17387	1308/	20051	20008	17538	16582	16914	17268	17696	18045	18358	18739	2
Day	des	Aug	10906	20971	17332	16585	16925	17283	11771	18060	18367	18742	_ •
	-		Tool	Jun	May	Apr	Mar	Feb	Jan	Ğ	Nov	5	2
					Feet)	Daily Contents (Acre Feet)	Daily Con					2	
					. 2001	Electric Lake 2000 - 2001	Electric L						
					ds	Reservoir Records	Reser						
					ompany	Utah Power & Light Company	tah Power	2					
						,	•						

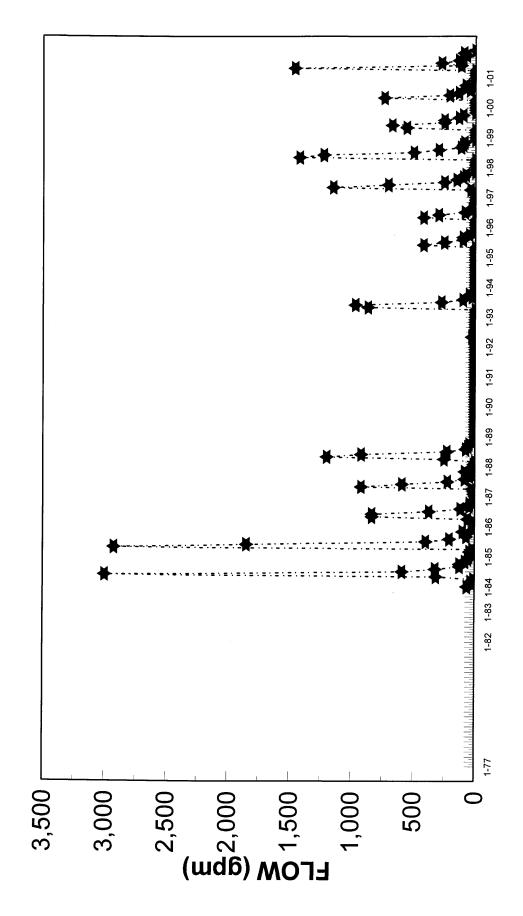
			Day		2	3	4	5	9	7	80	6	10	11	12	13	14	15	91	71	18	19	20	21	22	23	24	25	26	27	28	29	30	31	<b>Yearly Totals</b>	7,560	20.70	11.80	82.10	3.75	96.20	14.992
			Sep	54.20	54.20	56.40	48.80	96.80	68.10	68.10	08.99	08.99	65.60	77.00	82.10	82.10	79.60	78.30	77.00	78.30	77.00	08.09	54.20	54.20	54.20	53.10	53.10	48.80	56.40	42.20	41.10	40.00	40.00			1,845	61.50	40.00	82.10	40.00	96.20	3.660
			₽n∀	37.50	38.30	39.20	39.20	39.20	40.00	40.00	40.00	41.10	41.10	41.10	41.10	42.20	42.20	31.70	35.80	46.60	49.90	49.90	51.00	52.00	52.00	54.20	56.40	56.40	56.40	58.60	59.70	61.90	65.60	65.60		1,466	47.30	31.70	65.60	31.70	65.60	2.910
			InC	15.50	16.00	18.80	19.50	19.50	19.50	19.50	19.50	19.50	22.20	23.60	23.60	23.60	23.60	22.20	22.20	20.20	21.50	21.50	21.50	21.50	21.50	23.60	25.80	23.60	23.60	23.60	23.60	23.60	23.60	25.80		673	21.70	15.50	25.80	15.50	37.50	1.330
		Jun	16.00	16.70	17.40	17.40	17.40	16.70	16.70	16.70	16.70	16.70	16.00	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	16.00	15.50	15.50	15.50	15.50			479	16.00	15.50	17.40	14.20	18.10	951	
ords	1- 2001		May	12.80	12.80	12.80	12.80	12.80	12.80	12.80	13.20	13.20	13.20	13.20	13.20	13.20	13.20	13.20	13.20	13.20	13.20	13.20	13.70	13.70	13.70	13.70	14.20	14.20	14.20	14.20	14.20	14.20	14.20	14.20		416	13.40	12.80	14.20	12.80	14.20	826
Stream Discharge Records	Lake 2000	Daily Discharge (CFS)	Apr	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.70	13.20	13.20	13.20	13.20	13.20	13.20	13.20	13.20	13.20	12.80		Totals	406	13.50	12.80	13.70	12.30	13.70	208
Stream Discharge Records	Below Electric Lake 2000 - 2001	Daily Disc	Mar	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	13.20	13.20	13.20	13.20	13.20	Monthly Totals	399	12.90	12.80	13.20	12.80	13.20	167
St	Belo		Feb	12.30	12.30	12.30	12.30	12.30	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.80					356	12.70	12.30	12.80	12.30	12.80	706
			Jan	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	11.80	11.80	œ. =	11.80	11.80		379	12.20	08. E	12.30	11.80	12.30	751
			Dec	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30		381	12.30	12.30	12.30	12.30	12.30	756
		1	Nov	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30			369	12.30	12.30	12.30	12.30	12.30	732
			<del>ت</del>	12.80	12.80	13.20	13.20	13.20	13.20	13.20	13.20	13.20	13.20	13.70	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30		391	12.60	12.30	13.70	3.75	15.10	775
			Day	-	7	3	4	2	9	7	8	6	0	=	12	13	14	15	91	17	8	19	70	21	77	23	24	25	56	27	28	29	20	<u>=</u>		Total	Daily: Mean	Daily Min	Daily Max	Ins. Min	Ins. Max	Acre Fi

		Day	-	2	3	4	5	9	7	œ	6	10		12	14	15	16	17	18	61	3, 20	22	23	24	25	26	27	29	30	31	Yearly Totals	20,211	55.10	12.30	221.00	10.90	231.00	40,090		
		Sep	63.40	63.60	64.50	65.90	75.80	79.10	77.10	78.90	78.50	78.00	105.00	112.00	105.00	94.70	94.10	97.30	93.90	83.10	08.80	06.29	96.99	65.20	65.50	59.50	20.80	53.30	52.40			2,268	75.60	52.40	112.00	52.40	148.00	4,5()()		
		Aug	75.00	75.30	81.60	88.40	86.10	81.50	77.90	77.40	78.40	18.50	02.17	06 99	70.20	65.10	54.50	64.90	70.40	08.30	60 60	61.50	53.50	55.90	56.70	56.30	54 00	60.40	06.99	65.80		2.124	68.50	53.50	88.40	47.80	109:00	4.210		
		J <sub>E</sub> I	84.20	8.00	85.80	95.40	92.70	91.70	94.40	96.30	97.20	100.00	06.40	94.60	94.70	97.60	93.10	86.20	79.10	09.80	69 90	72.80	75.70	81.10	85.20	86.90	8140	79.10	77.70	78.50		2,671	86.20	68.50	100.00	09:99	116.00	5,300		
=	-	Jun	122.00	121.00	121.00	123.00	128.00	128.00	127.00	125.00	123.00	125.00	124.00	95.90	99.70	97.80	95.90	93.10	90.50	93.00	91.20	91.20	92.00	09'96	92.00	99.40	91.90	90.10	90.10			3.176	106.00	89.50	128.00	86.10	134.00	6,300	1	
Otan rower & Light Company Stream Discharge Records Huntington Creek at Plant 2000 - 2001		May	105.00	101.00	76.20	67.20	89.80	97.00	00.96	105.00	156.00	171.00	146.00	148.00	158.00	164.00	179.00	00.122	174.00	167.00	151.00	138.00	137.00	134.00	131.00	128.00	120.00	113.00	115.00	123.00		4,135	134.00	67.20	221.00	63.90	231.00	8,240		
Otan rower & Light Company Stream Discharge Records tington Creek at Plant 2000 - 2	Daily Discharge (CFS)	Apr	05.52	33.30	30.30	32.50	31.50	31.50	31.50	30.30	27.40	26.00	26.90	26.80	29.40	30.30	33.00	30.30	47.80	49.40	42.50	37.50	34.60	35.60	24.10	72.10	79.40	98.20	93.50		Totals	1/71	42.60	26.00	98.20	22.80	142.00	2.530		-
an rower Stream Dis gton Cree	Daily Dis	William	3.4.5	1460	14.00	16.50	20.00	16.20	06.51	17.00	19.30	17.70	17.20	20.90	21.40	21.80	20.30	10.00	20.70	22.30	23.10	24.70	28.60	27.70	30.00	27.40	26.60	25.70	27.90	S/.75	Monthly Totals	000	21.40	14.00	30.00	13.60	27.30	025.		-
Huntin	4	25.20	200	10.70	0.70	10.90	9 9	10.00	13.00	17.80	22.10	27.40	23.00	22.30	21.90	18.40	20.70	18 40	15.90	16.30	16.20	1 <b>6.0</b> 0	16.10	15.00	15.50	14.40	14.20				213	Ì	18.50	14.20	27.40	13.80	34.20	05.05		-
	10	07.71	17.00	17.50	17.00	18.30	18 00	17.00	17.90	20.50	21.00	19.20	19.30	17.70	20.40	19.30	17.80	19.80	20.80	22.30	18.90	21.40	19.90	20.70	19.60	18.80	18.90	19.80	19.30	19.10	507	100	19.20	17.50	22.30	16.40	05.67	1,130		
	Per	14 00	14.00	14 60	13.00	13.50	13.10	13.30	12.50	12.30	13.20	13.80	13.60	13.90	13.40	13.60	14 00	14.20	14.40	18.70	18.80	17.10	17.00	07.7	15.80	17.70	17.90	16.40	18.50	00./1	997		15.10	12.30	08.8	06.01	020	250		
	Nov	29.80	27.60	26.30	26.70	31 60	29.80	23.80	24.20	27.10	24.20	22.00	21.30	18.90	18.40	17.80	16.40	17.00	18.90	18.10	17.50	21.30	21.30	17.30	19.50	19.20	16.70	15.50	0.0		6.15		21.50	5.50	31.60	00.5	05.50	ρ		-
	Ö	09 69	68.10	67.20	72.60	72.50	71.00	70.90	70.10	70.00	74.10	65.90	26.60	20.30	46.10	44.30	42.20	37.20	38.10	37.10	43.50	42.90	44.40	38.70	37.70	45.10	47.10	41.90	43.80	13.60	1.650		53.20	3/.10	74.10	07.77	1270	1,25		
	Dav	-	2	3	4	5	9	7	<b>∞</b>	6	10	=	12	13	4 2	2 9	11	18	19	70	21	22	57	25	26	27	28	62 00	3 5	;	Total		Daily Mean	Daily Min	Daily Max	Ins. Min	Acre Ft	Notes		-

#### 

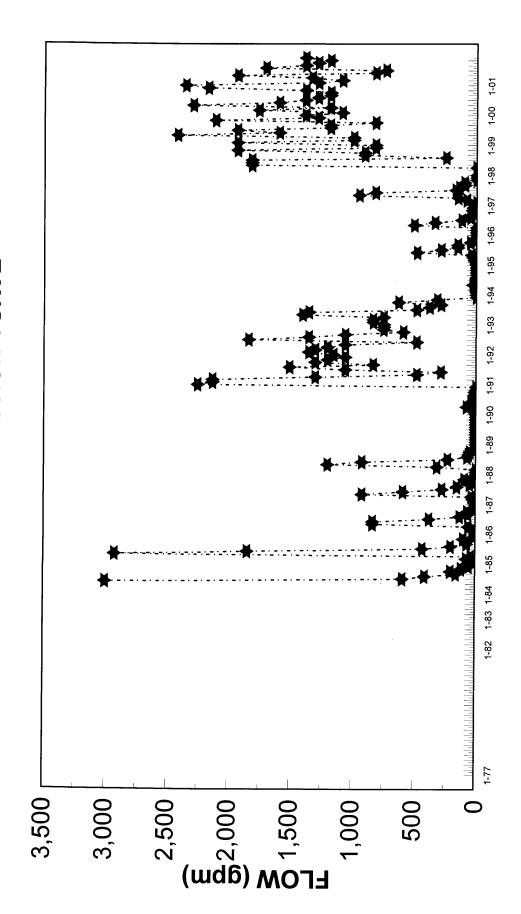
### DEER CREEK

#### ABOVE MINE DISCHARGE RECESSION CURVE



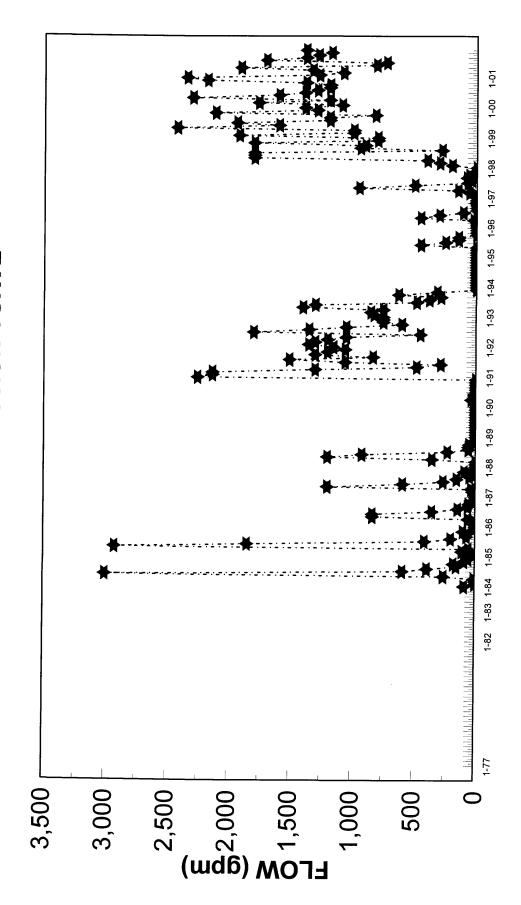
DEER CREEK

#### @ PERMIT BOUNDARY DISCHARGE RECESSION CURVE



DEER CREEK

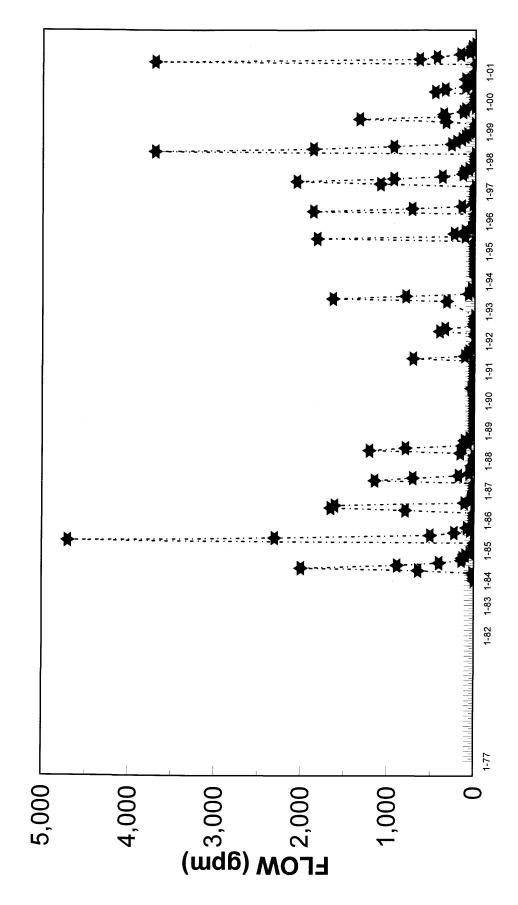
@ BELOW MINE DISCHARGE RECESSION CURVE



#### APPENDIX.

## **MEETINGHOUSE CANYON**

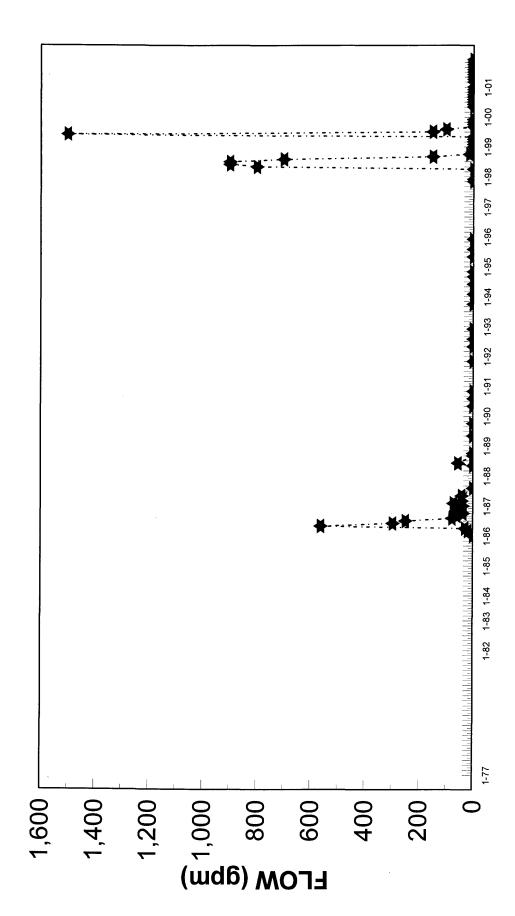
LEFT FORK
DISCHARGE RECESSION CURVE



#### 

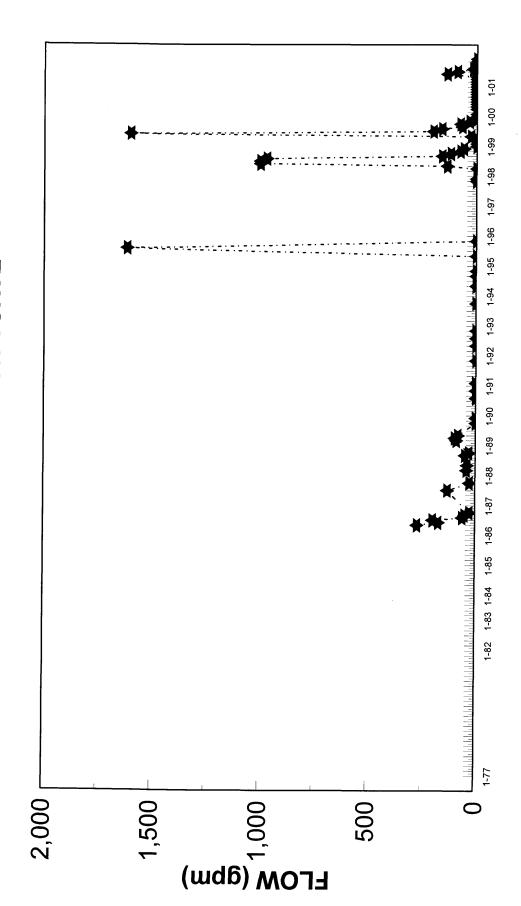
### MILL FORK

MFA1: ABOVE MINE DISCHARGE RECESSION CURVE



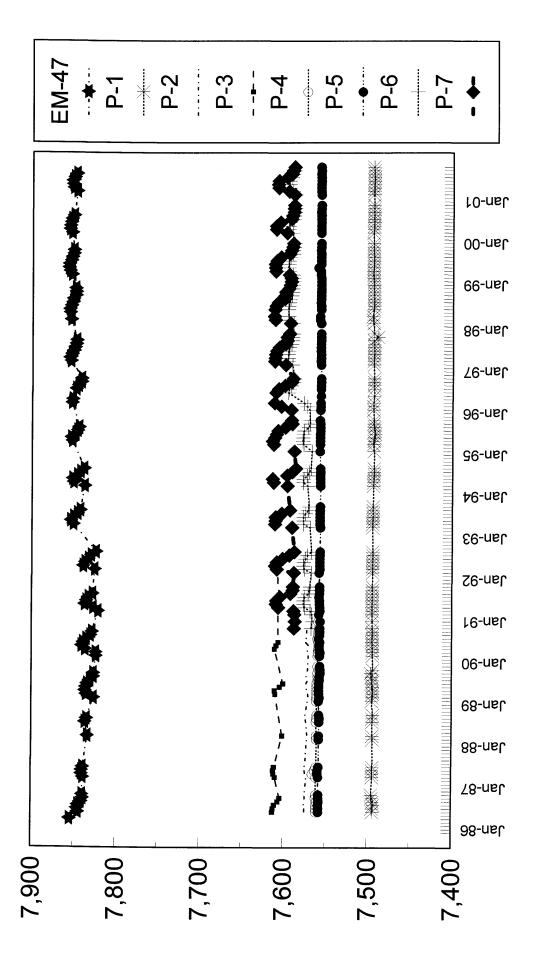
### MILL FORK

MFB2: BELOW MINE DISCHARGE RECESSION CURVE

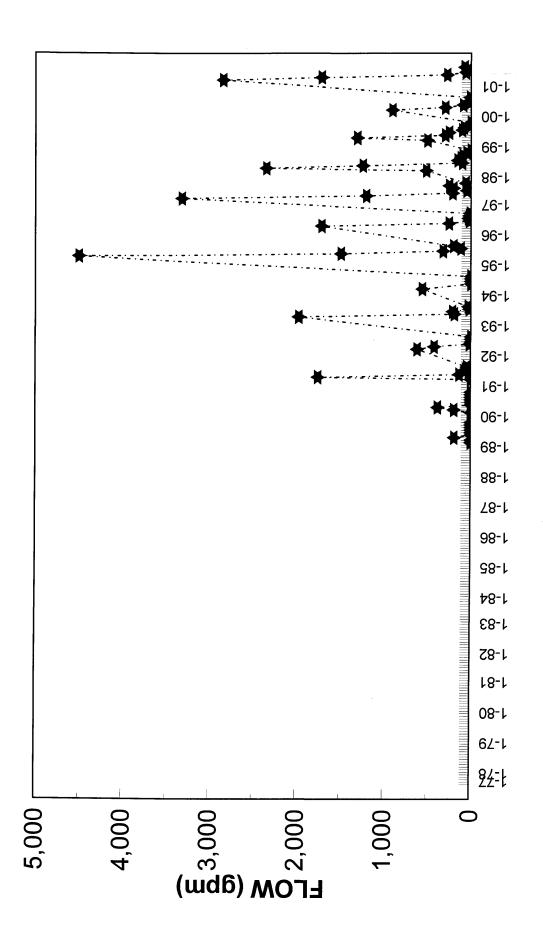


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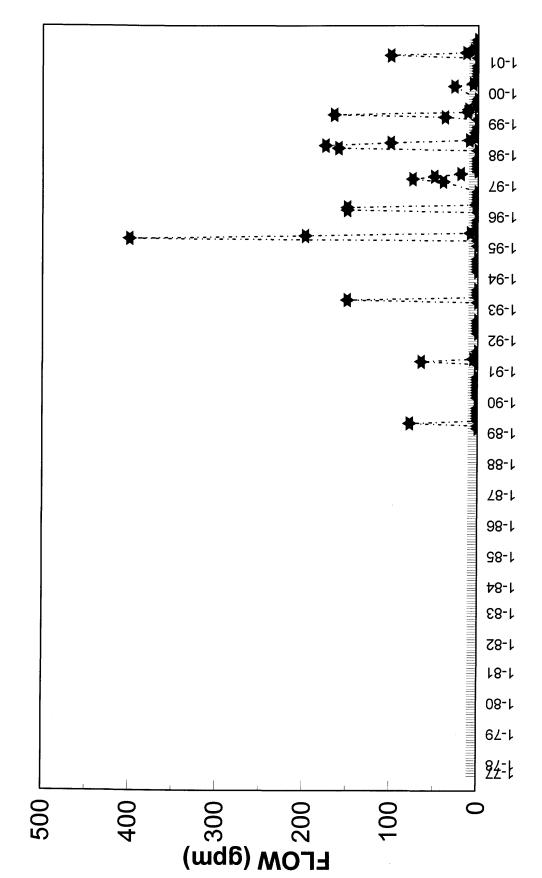
MONITORING WELLS PIEZOMETRIC DATA



RCF-1: RIGHT FORK DISCHARGE RECESSION CURVE

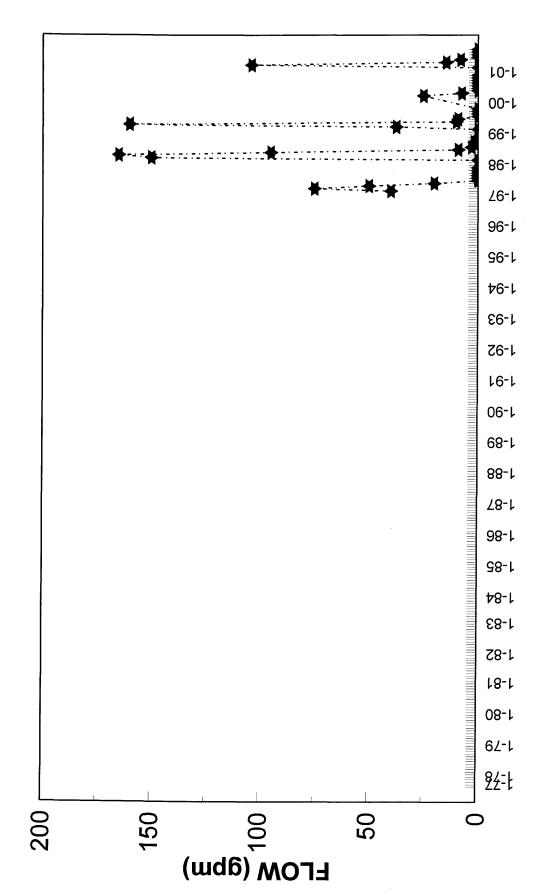


RCLF-1: LEFT FORK - BELOW BREAKOUTS DISCHARGE RECESSION CURVE

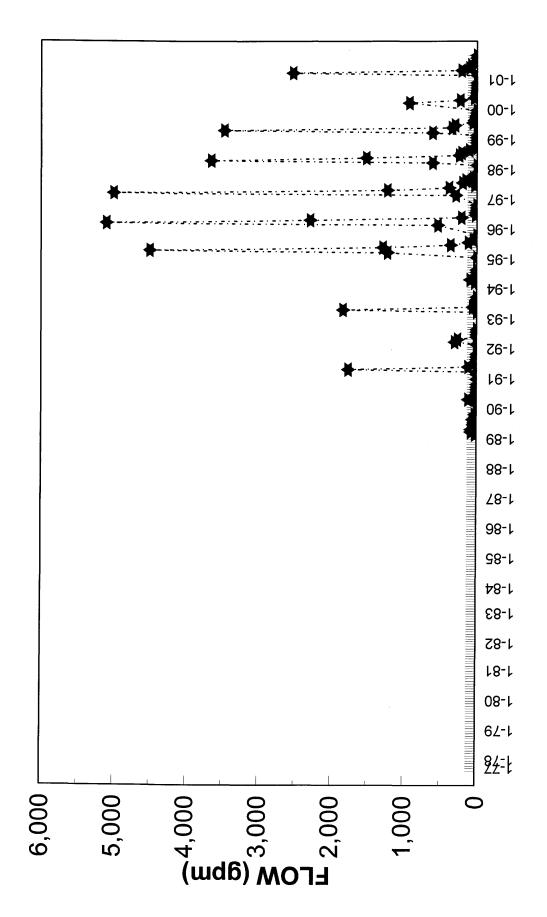


RILDA CANYON

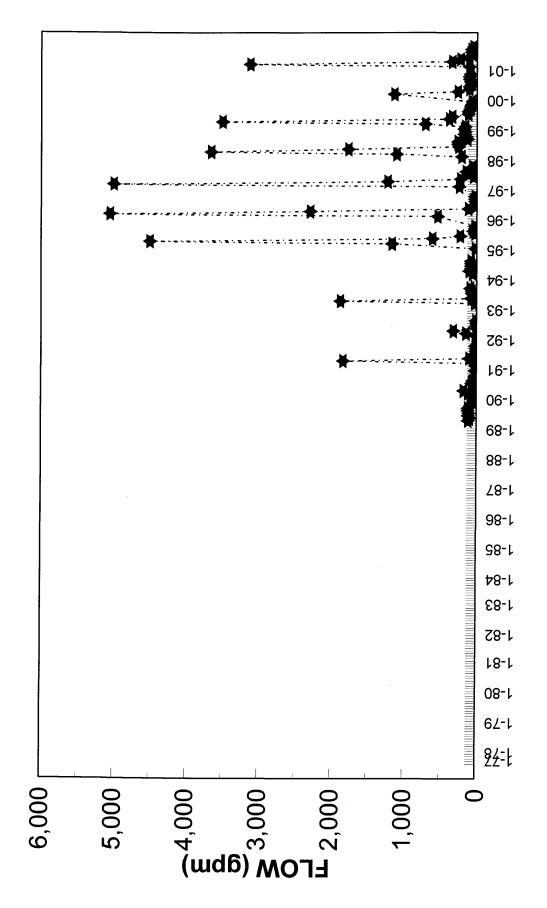
RCLF-2: RIGHT FORK - ABOVE BREAKOUTS DISCHARGE RECESSION CURVE



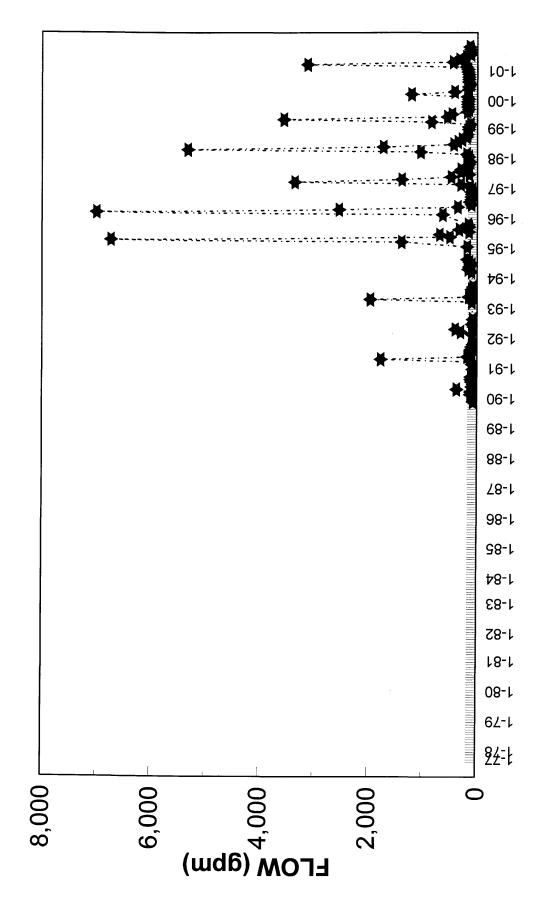
RCF-2: ABOVE NEWUA SPRINGS DISCHARGE RECESSION CURVE



RCF-3: BELOW NEWUA SPRINGS DISCHARGE RECESSION CURVE



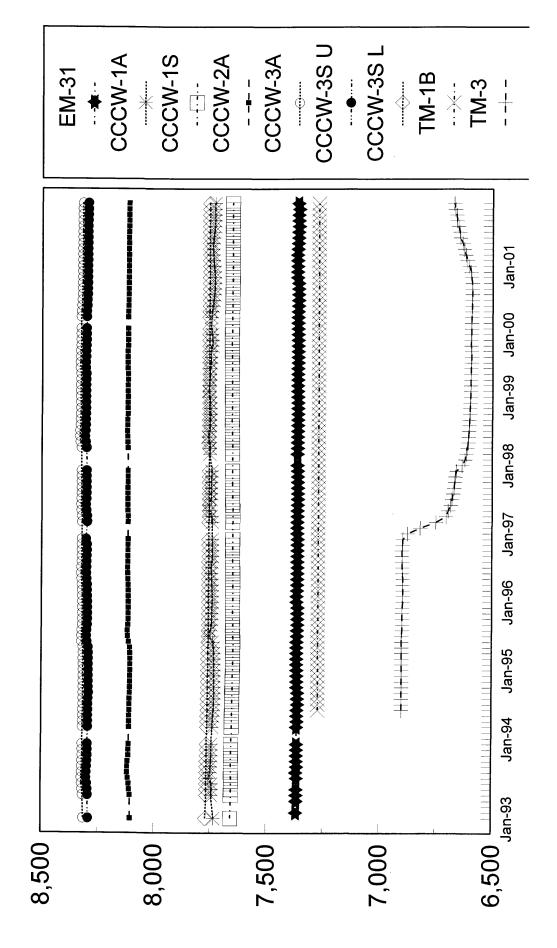
RCW-4: NEAR HUNTINGTON CANYON DISCHARGE RECESSION CURVE

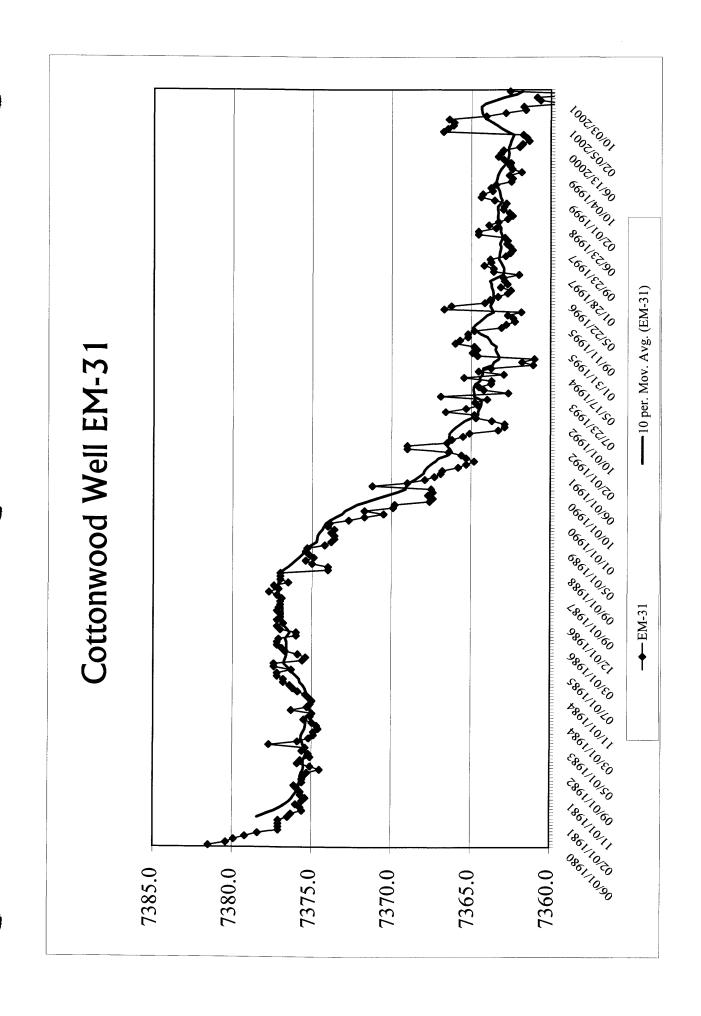


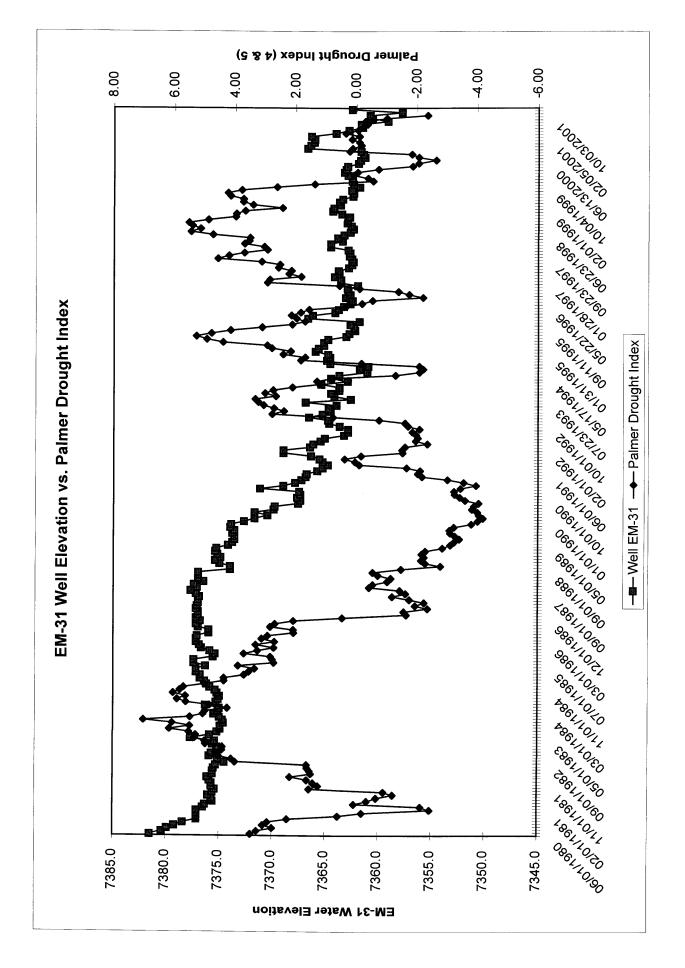
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## COTTONWOOD CANYON

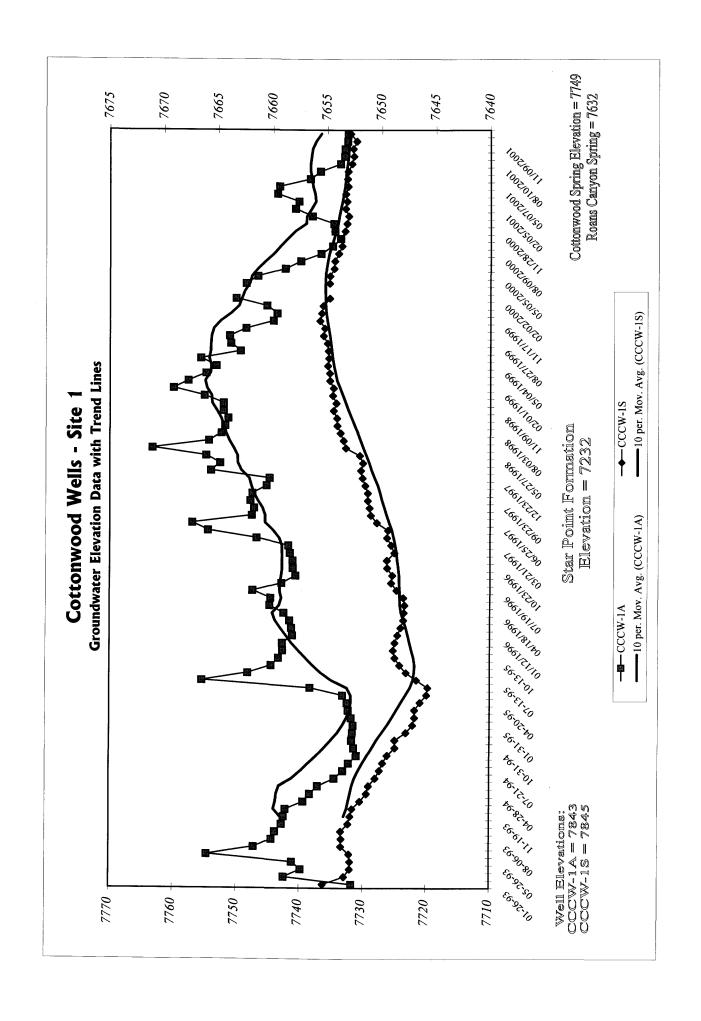
### MONITORING WELLS PIEZOMETRIC DATA

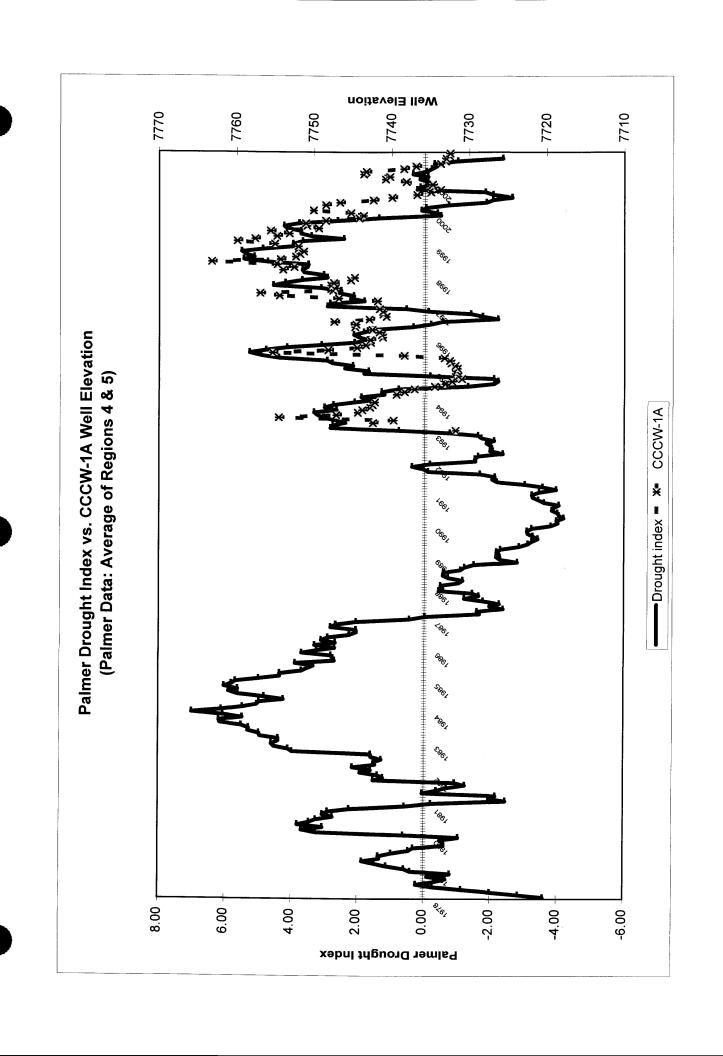


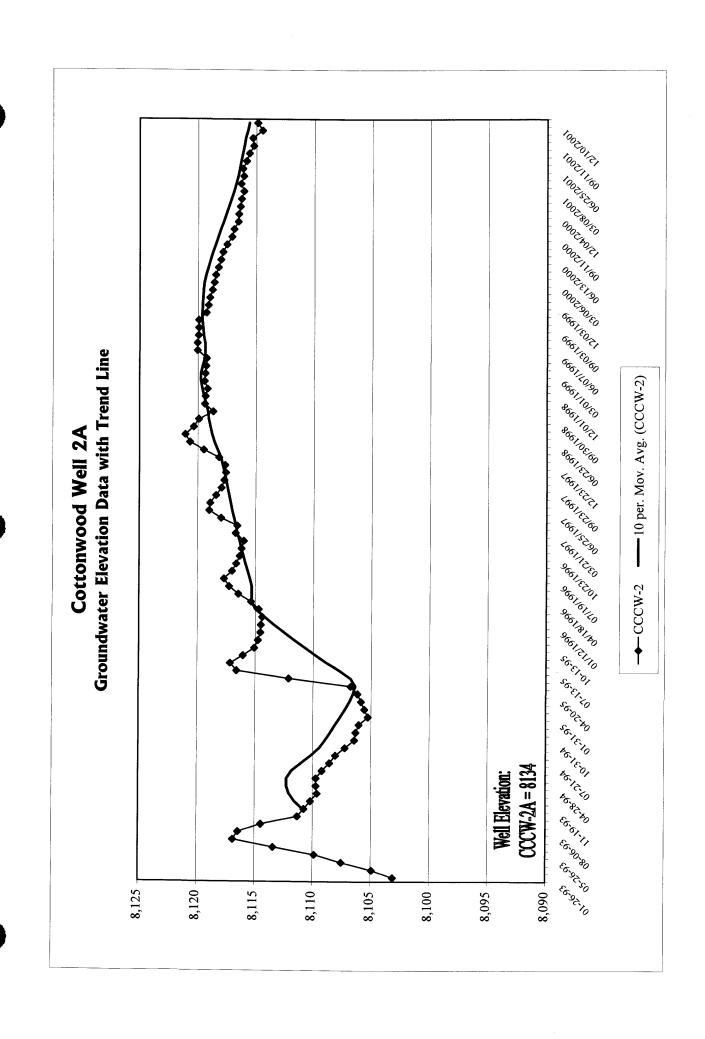


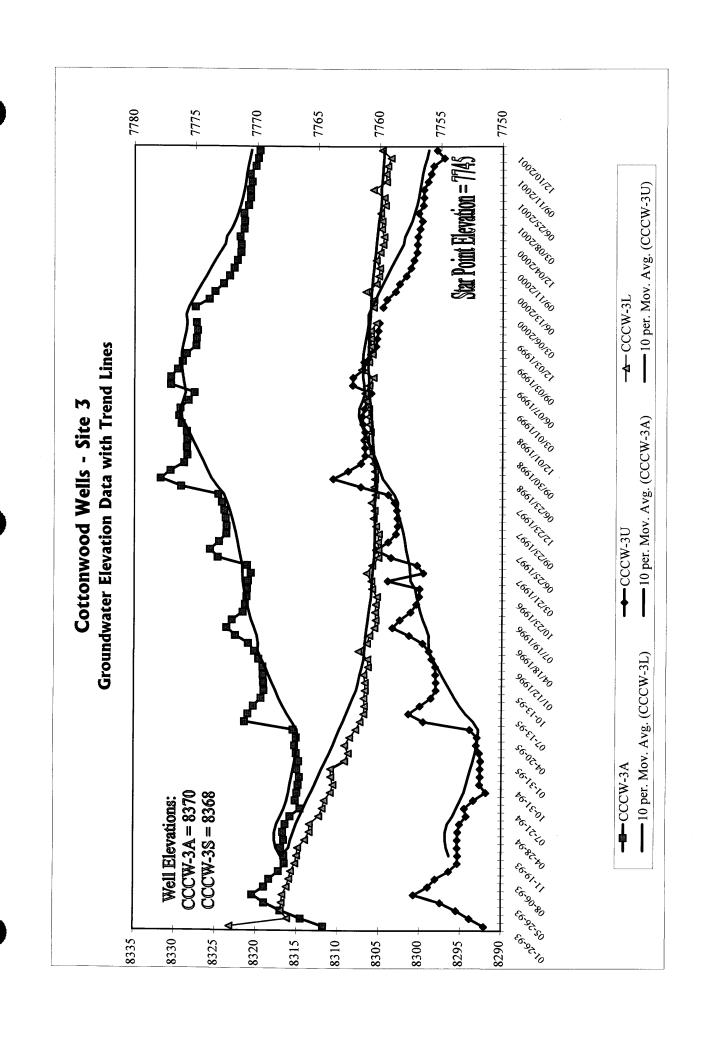


Page 1

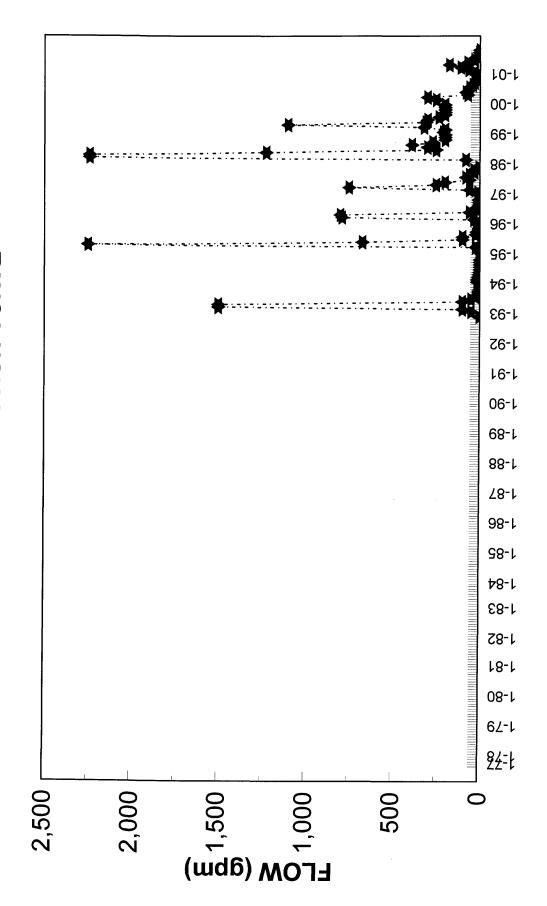




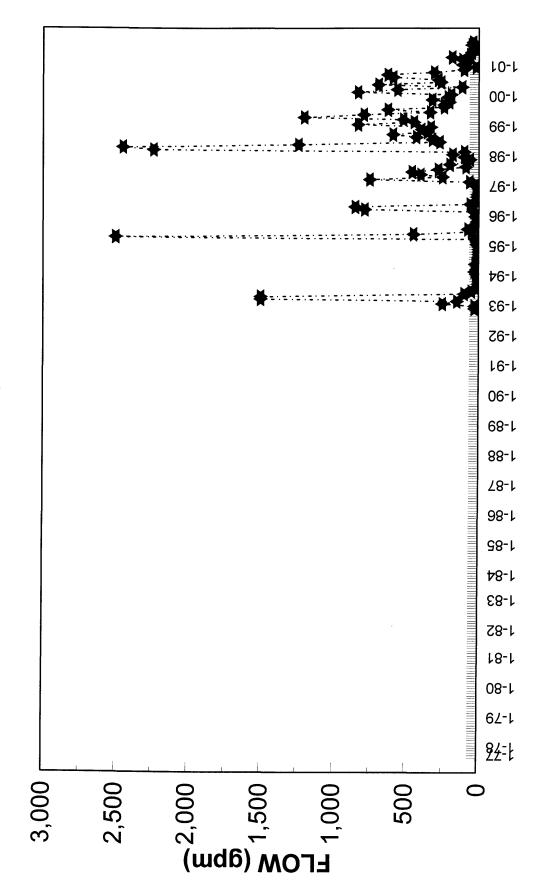




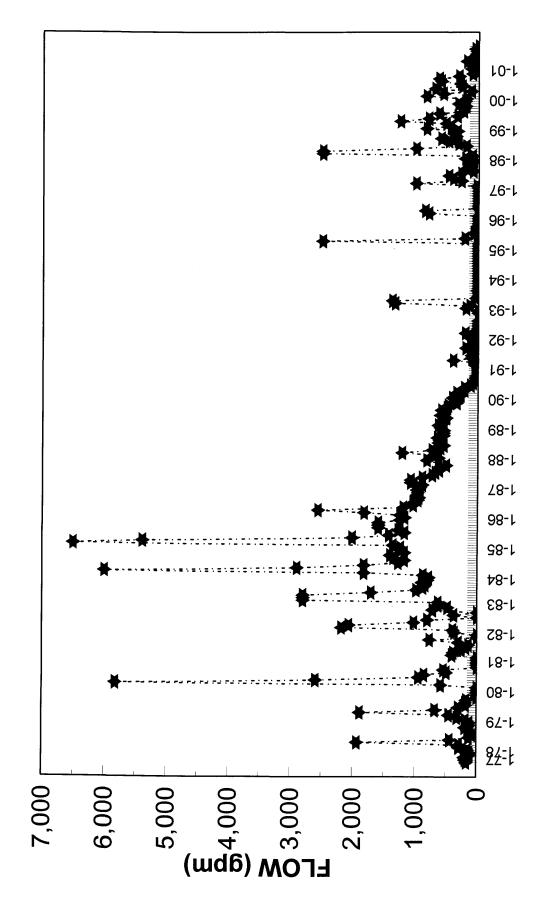
SW-1 DISCHARGE RECESSION CURVE



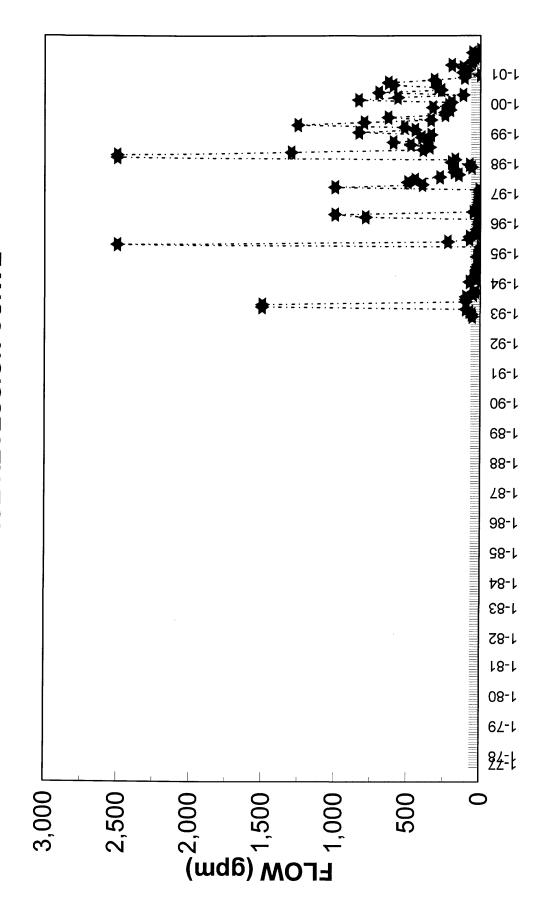
SW-2 DISCHARGE RECESSION CURVE



@ USGS FLUME DISCHARGE RECESSION CURVE

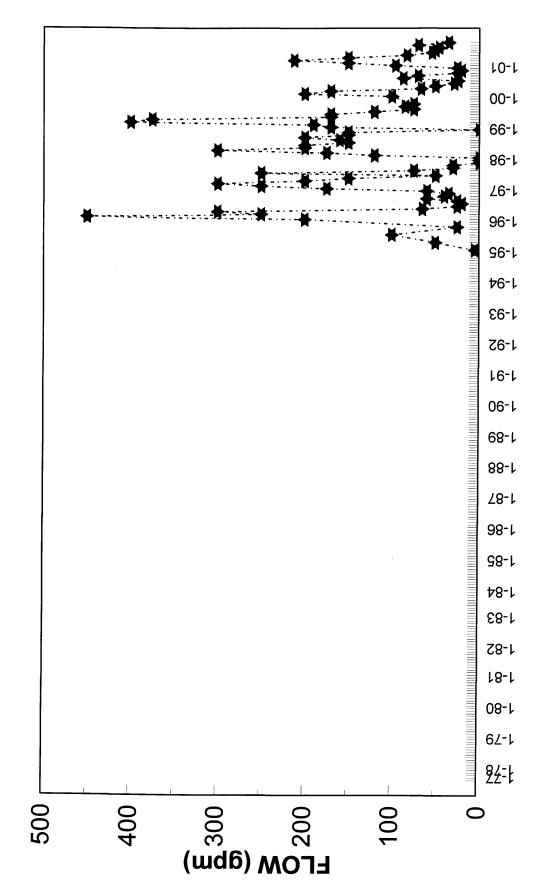


SW-3 DISCHARGE RECESSION CURVE



## COTTONWOOD CREEK

T-19
DISCHARGE RECESSION CURVE



STRAIGHT CANYON WATER QUALITY \*  $\frac{1-19}{1}$ 

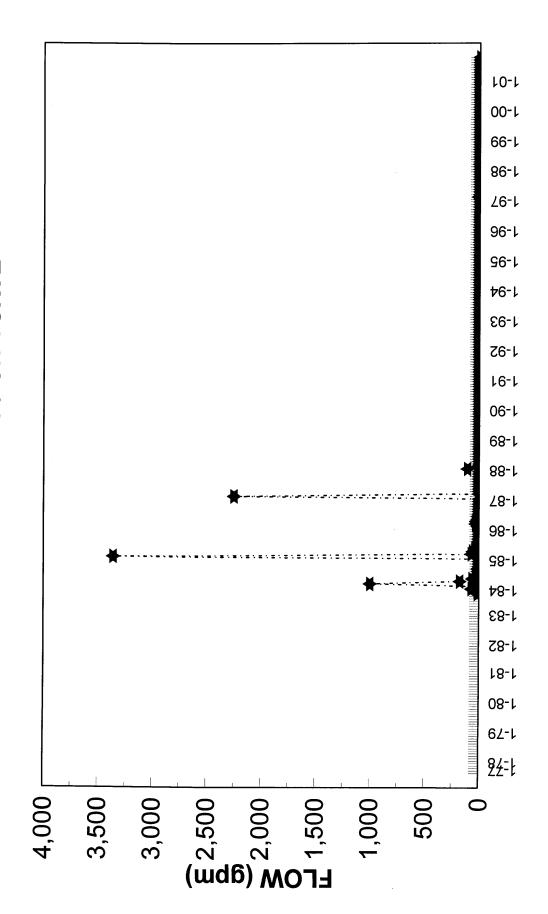
355         46         8         34         1012         40         61         70         61         70         61         70         61         70         61         71         61         7		ACIDITY	ALKALINITY BICARBONATE	CALCIUM	CARBONATE	CHLORIDE	CONDUCTIVITY (umbos/cm)	HARDNESS	IRON	IRON	IRON DISSOLYED MAGNESIUM MANGANESE	MANGANESE	OIL & GREASE	PH (units)	POTASSIUM	Milidos	SULFATE	ISS	Sar
313         46         8         34         1992         359         0.3         47         81         823         2         68         116         350         117         464         27         37         11         833         4         35         2         68         116         23         111         464         27         73         11         843         2         2         68         12         44	1		395	1		46	1312	410			70			8.33	3	8	285	15	742
461         56         67         39         139         468         27         87         61         853         4         73         2746         23           442         57         57         57         77         77         77         8         5         57         2746         25           445         57         6         43         1924         58         20         37         77         4 <th></th> <td></td> <td>383</td> <td>46</td> <td>•</td> <td>34</td> <td>1062</td> <td>350</td> <td>0.3</td> <td></td> <td>57</td> <td></td> <td></td> <td>8.52</td> <td>2</td> <td>89</td> <td>136</td> <td>37</td> <td>510</td>			383	46	•	34	1062	350	0.3		57			8.52	2	89	136	37	510
421         57         6         328         111         664         73         111         664         73         246         53         63         53         64         54         44         <			461	99		39.9	1399	498	2.7		87	0.1		8.55	8	82	277.8	225	784
345         46         6         6         139         140         6         140         6         140			422	23	9	32.8	===	464			78			8:38	4	75	254.6	٠	716
413         46         6         33         1002         33         0.3         57         57         86         2         66         156         25         215         46         4																			
461         57         8         46         1399         438         27         87         46         47			383	46	9	33	1062	350	0.3		57			8.3	7	89	136	S	510
41			461	57	•	46	1399	498	2.7		87			9.8	\$	95	285	225	784
4         4			415	52	7	38	1221	431	1.5		73			8.4	4	81	238	71	889
44         4		•	•	•	•	•	•	•	•	•	•	•	•	,	•		•	•	
434         42         12         42         116         440         0         66         6         6         6         6         6         7         116         40         105         40		+	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
424         58         23         1319         516         34         35         95         5         109         340         380			345	42	12	42	1105	400	0		89			•	3	103	181	7	722
311         42         16         48         121         454         1         80         4         1         15         26         11         1         4         105         26         11         4         105         26         11         10         4         10 <th></th> <td></td> <td>424</td> <td>28</td> <td>23</td> <td>53</td> <td>1319</td> <td>516</td> <td>· m</td> <td></td> <td>35</td> <td></td> <td></td> <td>. 0</td> <td>'n</td> <td>601</td> <td>340</td> <td>309</td> <td>898</td>			424	28	23	53	1319	516	· m		35			. 0	'n	601	340	309	898
317         42         9         40         897         40         0         55         45         124         15         124         15         1			393	51	16	48	1221	454	-		80			•	4	105	266	113	792
371         42         9         40         887         340         0         56         8         2         73         124         15           386         46         107         400         1         72         60																			
427         52         19         46         1097         640         1         72         9         4         87         196         69           396         46         13         440         92         440         0         61         9         4         87         196         69           317         360         110         300         780         275         630         450         864         300         860         140         3170           336         427         205         350         871         60         7         864         300         864         300         1440         3170           430         427         205         350         241         0         38         8         1         441         3170           420         48         9         35         34         2         56         24         1         45         3         1         46         4 <t< td=""><th></th><td></td><td>371</td><td>42</td><td>6</td><td>40</td><td>897</td><td>340</td><td>0</td><td></td><td>26</td><td></td><td></td><td>∞</td><td>2</td><td>73</td><td>124</td><td>15</td><td>539</td></t<>			371	42	6	40	897	340	0		26			∞	2	73	124	15	539
356         46         13         44         982         440         0         61         9         3         80         161         36           317         36.0         11.0         30.0         41.0         993         1.30         67.00         8.49         200         20.0         64.07         137.0           453         440         30.0         41.0         993         1.30         67.00         8.49         20.0         67.00         8.44         300         86.00         144.0         317.0           334         42.0         42.0         42.0         42.0         42.0         42.0         8.44         300         86.00         144.0         317.0           352         44         6         20         356         244         1         45         9         1         48         35         31.7           430         44         29         736         244         1         45         9         1         48         83         13.2           437         43         43         44         43         0         4         43         0         4         43         44         44         44 <th></th> <td></td> <td>427</td> <td>52</td> <td>61</td> <td>46</td> <td>1097</td> <td>640</td> <td></td> <td></td> <td>72</td> <td></td> <td></td> <td>6</td> <td>4</td> <td>87</td> <td>196</td> <td>69</td> <td>684</td>			427	52	61	46	1097	640			72			6	4	87	196	69	684
317         360         110         300         780         275         0.30         4500         53.33         450         200         52.00         52.00         52.00         54.0         317           433         440         300         410         979         993         1.30         67.00         864         3.00         86.00         144.0         317.0           336         427         205         241         0         56         241         0         36         240         1.30         86.00         144.0         317.0           303         34         6         20         356         241         0         45         9         1         48         1         48         1         48         1         48         13         34         40         1         45         45         0         4         45         0         4         45         4			396	46	13	4	982	440	0		61			6	8	80	191	36	209
317         360         110         300         780         275         0.30         4500         819         2 00         520         840         270           356         427         200         410         979         979         979         130         6700         6700         860         140         370         860         1440         3770           356         427         205         350         241         0         67         38         86         2.0         6467         167         137           420         48         9         35         241         0         67         38         8         1         36         167         137           420         48         9         35         29         241         0         45         9         1         646         167         137           420         48         9         36         24         1         45         4 </td <th></th> <td></td>																			
433         540         300         410         979         993         130         6700         864         300         864         300         647         1840         3170           336         427         205         350         851         560         067         5333         848         2.50         6467         1057         1327           303         34         6         20         356         241         0         38         848         2.50         6467         1057         1327           320         48         9         35         24         0         45         9         1         48         83         132           322         41         8         29         0         43         0         84         0         9         1         48         81         132         132           437         74         78         30         76         4         54         0         9         2         46         40         84         87         40         132         122         46         48         0         9         1         48         10         10         10         10			317	36.0	11.0	30.0	780	275	0.30		45.00			8.19	2.00	52.00	84.0	27.0	464
356         427         20.5         350         851         560         067         33.33         8.48         2.50         64,67         1057         1327           303         34         6         20         596         241         0         38         8         1         34         53         36           420         48         9         35         92         241         0         36         9         1         62         125         321           420         48         9         35         29         756         284         1         45         9         1         62         125         321           190         39         34         29         756         284         1         48         0         9         1         48         83         132           437         76         40         4         48         0         9         2         45         84         13           2550         60         26         43         1         48         0         9         1         46         13           2750         50         26         26         44			433	54.0	30.0	41.0	626	993	1.30		67.00			8.64	3.00	86.00	144.0	317.0	631
303         34         6         20         596         241         0         38         8         1         34         53         36         420         48         9         1         62         135         315         315         340         2         45         45         9         1         62         135         317         318			356	42.7	20.5	35.0	851	999	19.0		53.33			8.48	2.50	64.67	105.7	132.7	529
303         34         6         20         556         241         0         38         8         1         34         53         36           420         48         9         35         912         350         2         56         9         1         62         125         321           352         41         8         29         756         284         1         45         9         1         48         8         132         321           190         39         34         22         64         0         9         1         48         8         132         31         132           437         74         78         30         76         4         54         0         9         2         45         8         132         132           303         56         26         685         331         1         48         0         9         2         45         66         122         68         122         68         122         68         122         68         122         68         122         68         122         88         122         84         9         1 <th></th> <td></td>																			
420         48         9         35         912         350         2         56         9         1         62         125         321           352         41         8         29         35         45         9         1         62         125         321           190         39         34         22         631         299         0         43         0         8         2         37         50         40           437         74         78         30         776         406         4         54         0         8         2         37         50         40           437         74         78         30         766         685         331         1         48         0         9         2         45         65         122           27500         5000         10.00         21.00         614.00         300.00         6.30         0.10         41.00         10.00         34.00         39.00         15.00         44.00         84.00         160.00         115.0         44.00         84.00         160.00         115.0         44.00         84.00         160.00         115.0         115.0			303	34	9	20	969	241	0		38			<b>∞</b>	-	34	53	36	340
352         41         8         29         756         284         1         45         9         1         48         83         132           190         39         34         22         631         299         0         43         0         8         2         37         50         40           437         74         78         30         776         406         4         54         0         9         3         54         84         269           437         74         78         30         776         406         4         54         0         9         3         54         89         122           275.00         50.00         10.00         20.00         11         48         0         9         3         45         84         269         122           275.00         50.00         10.00         0.10         41.00         0.10         41.00         0.10         41.00         10.00         39.00         33.00         33.00         33.00         33.00         33.00         33.00         33.00         33.00         33.00         33.00         33.00         33.00         33.00         33.00 </td <th></th> <td></td> <td>420</td> <td>48</td> <td>6</td> <td>35</td> <td>912</td> <td>350</td> <td>7</td> <td></td> <td>96</td> <td></td> <td></td> <td>6</td> <td>-</td> <td>62</td> <td>125</td> <td>321</td> <td>540</td>			420	48	6	35	912	350	7		96			6	-	62	125	321	540
190         39         34         22         631         299         0         43         0         8         2         37         50         40           437         74         78         30         776         406         4         54         0         8         2         37         50         40           303         53         26         26         685         331         1         48         0         9         2         45         65         122           275.00         50.00         10.00         21.00         644.00         300.00         0.30         0.10         41.00         0.10         5.00         8.87         4.00         84.00         15.00           340.00         60.00         20.00         41.00         0.10         5.00         8.87         4.00         84.00         15.00         35.00         15.00         35.00         15.00         35.00         15.00         35.00         15.00         35.00         35.00         35.00         35.00         35.00         35.00         35.00         35.00         35.00         35.00         35.00         45         45         45         45         45         45<			352	41	∞	29	756	284	_		45			6	-	48	83	132	443
190         39         34         22         631         299         0         43         0         8         2         37         50         40           437         74         78         30         776         406         4         54         0         9         3         54         84         269           330         56         26         665         331         1         48         0         9         3         54         84         269           275.00         50.00         10.00         21.00         614.00         300.00         0.50         0.10         41.00         0.10         500         799         1.00         34.00         15.00         115.0           340.00         60.00         20.00         41.00         10.10         41.00         0.10         5.00         8.40         2.30         33.00         15.0           312.50         55.00         17.50         28.00         0.10         5.00         8.40         2.30         94.80         63.8           190         14.3         1.0         20.0         581         17         0.10         58.80         0.01         10         744																			
437         74         78         30         776         406         4         54         0         9         3         54         84         269           303         53         56         26         685         331         1         48         0         9         3         54         84         269           275.00         55         26         685         331         1         48         0         9         3         54         84         269           275.00         50.00         10.00         21.00         614.00         300.00         0.50         0.10         41.00         10.00         34.00         34.00         34.00         34.00         34.00         35.00         34.00         34.00         35.00         34.00         36.00         34.00         35.00         34.00         36.00         34.00         36.00         34.00         36.00         34.00         36.00         34.00         36.00         34.00         36.00         34.00         36.00         34.00         36.00         34.00         36.00         34.00         36.00         34.00         36.00         36.00         36.00         36.00         36.00         36.00			190	39	34	22	631	299	0		43	0		∞	7	37	50	40	388
303         53         56         26         685         331         1         48         0         9         2         45         65         122           275.00         50.00         10.00         21.00         614.00         300.00         0.50         0.10         41.00         0.10         5.00         7.99         1.00         34.00         35.00         115.0           340.00         60.00         20.00         41.00         10.20         0.10         70.00         0.10         5.00         8.79         4.00         84.00         15.00         115.0           312.50         55.00         17.50         28.00         821.30         366.50         0.80         0.10         70.00         8.40         2.30         84.00         15.00         15.0           312.50         55.00         14.3         1.0         20.0         63.8         0.10         55.80         0.10         50.0         84.0         63.8         10         63.8         10         44.00         84.0         65.0         87.0         63.8         10         44.0         67.0         10         67.0         10         744         0.70         12         39.0         10     <			437	74	78	30	776	406	4		54	0		6	٣	54	84	569	200
275.00         50.00         10.00         21.00         614.00         300.00         0.50         0.10         5.00         7.99         1.00         34.00         35.0         35.0           340.00         60.00         20.00         41.00         1062.00         430.00         1.20         0.10         50.00         8.87         4.00         84.00         160.00         115.0           312.50         55.00         17.50         28.00         821.30         366.50         0.80         0.10         55.80         0.10         5.00         8.40         2.30         84.00         165.00         115.0           312.50         55.00         17.50         28.00         821.30         0.10         55.80         0.10         5.00         8.40         2.30         94.80         63.8           190         14.3         1.0         20.0         581         178         0.05         0.03         24.00         0.01         1.0         7.44         0.70         12         39.0         1.0           43         45         45         41         45         38         13         44         43         45         45         38			303	53	95	76	989	331	-		48	0		6	2	45	99	122	427
275.00         50.00         10.00         21.00         614.00         300.00         0.50         7.99         1.00         34.00         35.0           340.00         60.00         20.00         41.00         1062.00         430.00         1.20         0.10         5.00         8.87         4.00         84.00         160.00         115.0           312.50         55.00         17.50         28.00         821.30         366.50         0.80         0.10         5.00         8.40         2.30         84.00         160.00         115.0           190         14.3         1.0         20.0         581         178         0.05         0.03         24.00         0.01         1.0         7.44         0.70         12         39.0         1.0           437         92.0         78.0         67.9         1380         993         5.10         0.38         92.00         0.20         5.0         8.87         30.20         1.25         336.0         420.0           354         46.0         16.7         38.2         917         379         0.77         0.16         58.80         0.06         4.0         8.41         34.3         45         45         38		;	;	;															
340.00         60.00         20.00         41.00         1062.00         430.00         1.20         0.10         5.00         8.87         4.00         84.00         160.00         115.0           312.50         55.00         17.50         28.00         821.30         366.50         0.80         0.10         5.00         8.40         2.30         53.50         94.80         63.8           190         14.3         1.0         20.0         581         178         0.05         0.03         24.00         0.01         1.0         7.44         0.70         12         39.0         1.0           437         92.0         78.0         67.9         1380         993         5.10         0.38         92.00         0.20         5.0         8.87         30.20         1.25         336.0         420.0           354         46.0         16.7         38.2         917         379         0.77         0.16         58.80         0.06         4.0         8.41         3.43         72.30         152.6         85.5           45         45         45         38         13         45         18         11         44         43         45         38		0.00	275.00	50.00	10.00	21.00	614.00	300.00	0.50	0.10	41.00	0.10	2.00	7.99	1.00	34.00	39.00	35.0	360
312.50 55.00 17.50 28.00 821.30 366.50 0.80 0.10 55.80 0.10 5.00 8.40 2.30 53.50 94.80 63.8  190 14.3 1.0 20.0 581 178 0.05 0.03 24.00 0.01 1.0 7.44 0.70 12 39.0 1.0  437 92.0 78.0 67.9 1380 993 5.10 0.38 92.00 0.20 5.0 8.87 30.20 1.25 336.0 420.0  354 46.0 16.7 38.2 917 379 0.77 0.16 58.80 0.06 4.0 8.41 3.43 72.30 152.6 85.5  45 45 30 45 41 45 38 13 45 38 13 45 38		10.00	340.00	00.09	20.00	41.00	1062.00	430.00	1.20	0.10	70.00	0.10	2.00	8.87	4.00	84.00	160.00	115.0	089
190         14.3         1.0         20.0         581         178         0.05         0.03         24.00         0.01         1.0         7.44         0.70         1.2         39.0         1.0           437         92.0         78.0         67.9         1380         993         5.10         0.38         92.00         0.20         5.0         8.87         30.20         125         336.0         420.0           354         46.0         16.7         38.2         917         379         0.77         0.16         58.80         0.06         4.0         8.41         3.43         72.30         152.6         85.5           45         45         30         45         38         13         45         11         44         43         45         38		00.01	312.50	55.00	17.50	28.00	821.30	366.50	0.80	0.10	55.80	0.10	2.00	8.40	2.30	53.50	94.80	63.8	515
190         14.3         1.0         20.0         581         178         0.05         0.03         24.00         0.01         1.0         7.44         0.70         12         39.0         1.0           437         92.0         78.0         67.9         1380         993         5.10         0.38         92.00         0.20         5.0         8.87         30.20         125         336.0         420.0           354         46.0         16.7         38.2         917         379         0.77         0.16         58.80         0.06         4.0         8.41         3.43         72.30         152.6         85.5           45         45         30         45         13         45         11         44         43         45         38	•	77-2000																	
437 92.0 78.0 67.9 1380 993 5.10 0.38 92.00 0.20 5.0 8.87 30.20 125 336.0 420.0 85.0 85.0 8.81 30.20 125 336.0 420.0 85.0 85.5 85.5 85.5 85.5 85.5 85.5 8		0.1	061	14.3	1.0	20.0	581	178	0.05	0.03	24.00	0.01	1.0	7.44	0.70	13	39.0	0.1	340
354 460 16.7 38.2 917 379 0.77 0.16 58.80 0.06 4.0 8.41 3.43 72.30 152.6 85.5 45 45 30 45 41 44 43 45 45 38		10.0	437	92.0	78.0	6.79	1380	993	5.10	0.38	92.00	0.20	5.0	8.87	30.20	125	336.0	420.0	910
45 45 30 45 41 44 38 13 44 18 11 44 43 45 38		6.3	354	46.0	16.7	38.2	917	379	0.77	0.16	58.80	90.0	4.0	8.41	3.43	72.30	152.6	85.5	268
		12	45	45	30	45	41	45	38	13	45	ĕ	=	44	43	45	45	38	45

Quality parameters are reported as mg/l unless otherwise noted.
 Data: Database input restricted to values greater then laboratory minimum detection limit.

#### APPENDIA 5

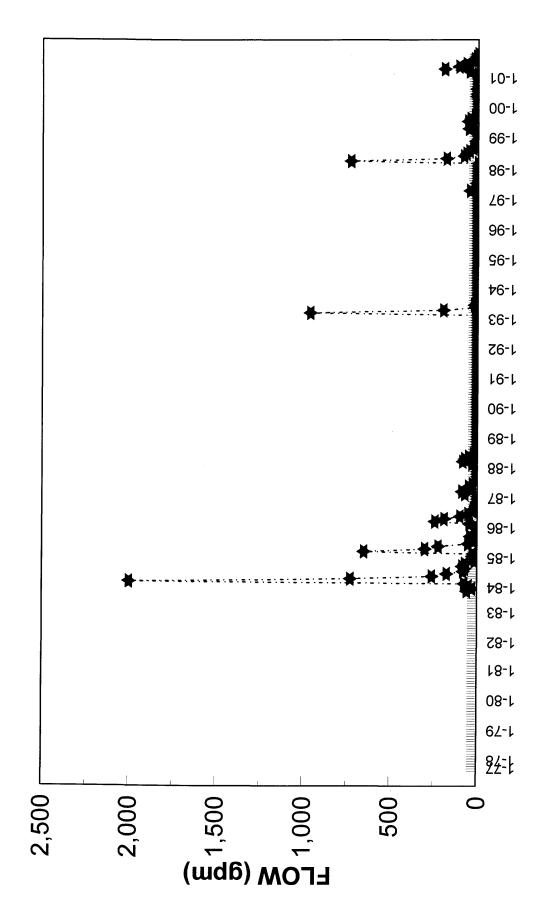
## **GRIMES WASH**

## RIGHT FORK DISCHARGE RECESSION CURVE



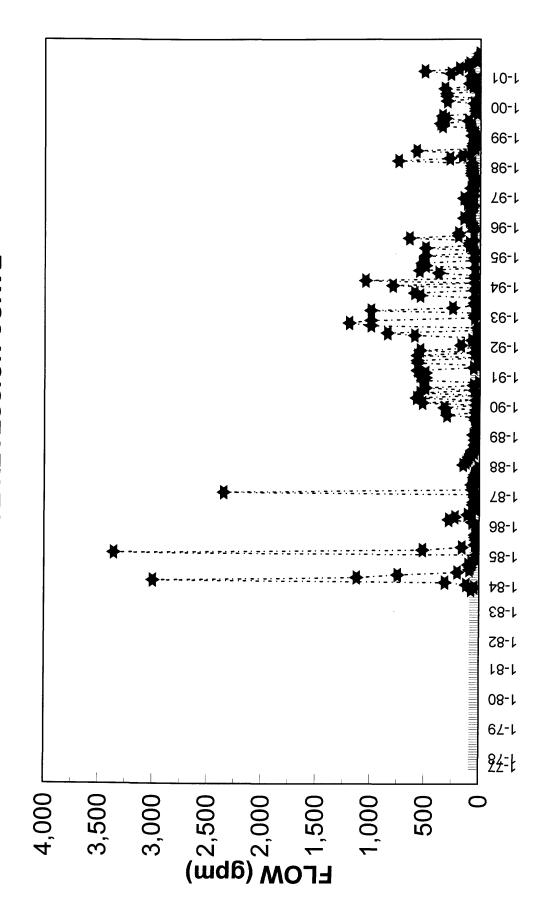
## **GRIMES WASH**

LEFT FORK
DISCHARGE RECESSION CURVE



## **GRIMES WASH**

BELOW MINE DISCHARGE RECESSION CURVE



#### 

## Spring: Burnt Tree vs. Precipitation EAST MOUNTAIN SPRINGS PEAK FLOW (JULY) VS. EAST MOUNTAIN WEATHER STATION Burnt Tree PRECIPITATION P661 EAST MTN $\frac{1}{2}$ S $\frac{1}$

80<sub>0</sub> Burnt Tree 100/ 30 52 20 15 9 5 0 Spring Flow (gpm)

East Mountain Springs Burnt Tree

## EAST MOUNTAIN PRECIPITATION Spring: Elk Spring vs. Precipitation Peak flow (July) vs. east mountain weather station EAST MOUNTAIN SPRINGS ELK SPRING PRECIPITATION SPRING DISCHARGE (GPM) 00I

80<sub>0</sub> Elk Spring 166/ 700 009 200 400 300 200 100 Ó Spring Flow (gpm)

East Mountain Springs Elk Spring

## Spring: Sheba Springs vs. Precipitation EAST MOUNTAIN SPRINGS PEAK FLOW (JULY) VS. EAST MOUNTAIN WEATHER STATION Sheba Springs PRECIPITATION P661 EAST MTN SPRING DISCHARGE (GPM)

1002 6<sub>6</sub>/ 80<sub>0</sub> 100/ 966/ <sub>2</sub>66<sup>√</sup> Sheba Springs <sup>6</sup>66√ c<sub>6</sub>6/ 10<sub>0/</sub> 0661 6<sub>6</sub> 880× √861 9861 28° 25 20 6 Ŋ 15 Spring Flow (gpm)

East Mountain Springs Sheba Springs

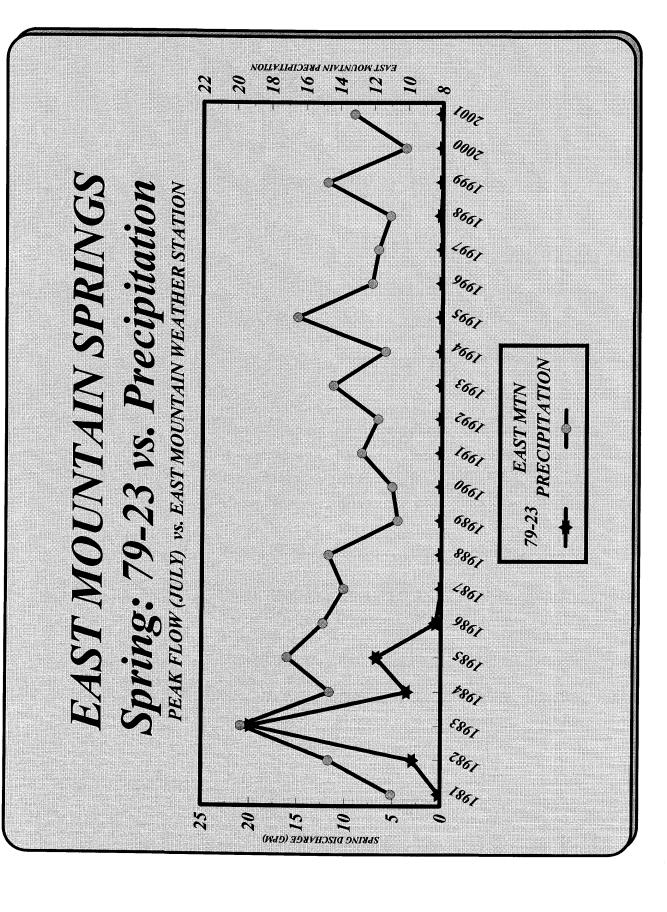
## EVZL WODNIYIN EKECIEITATION ∞ Spring: Teds Tub vs. Precipitation EAST MOUNTAIN SPRINGS PEAK FLOW (JULY) VS. EAST MOUNTAIN WEATHER STATION Teds Tub PRECIPITATION £667 EAST MTN SPRING DISCHARGE (GPM)

## EVZL WORNLYIN EKECIBILYIION EAST MOUNTAIN SPRINGS PEAK FLOW (JULY) vs. EAST MOUNTAIN WEATHER STATION Spring: 79-10 vs. Precipitation BO01 79-10 PRECIPITATION £667 EAST MTN \*857

80<sub>0/</sub> 79-10 100/ Spring Flow (gpm)

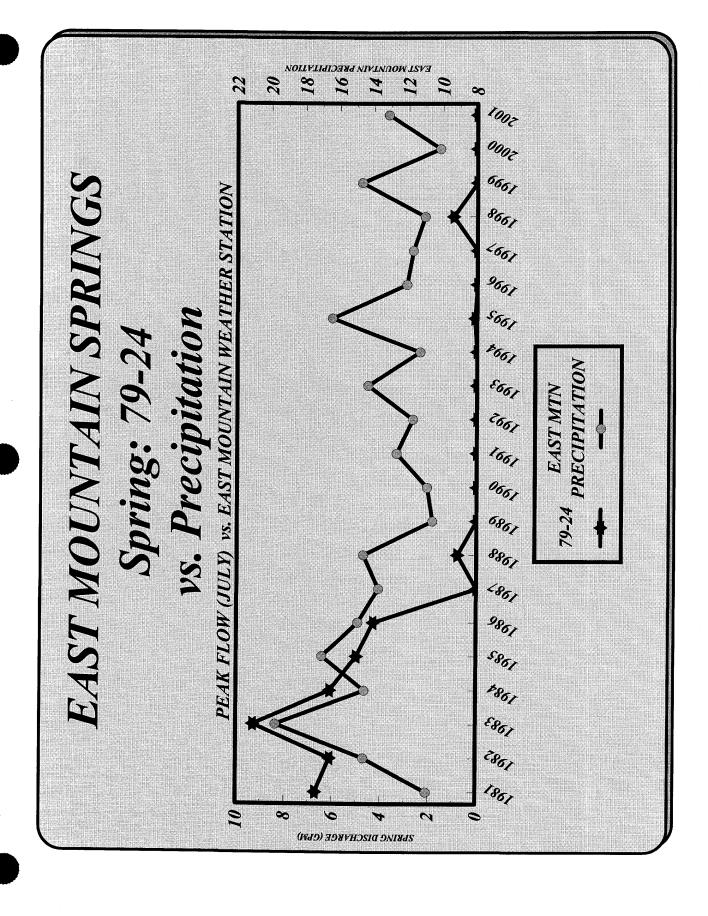
East Mountain Springs 79-10

## EAST MOUNTAIN PRECIPITATION EAST MOUNTAIN SPRINGS Spring: 79-15 vs. Precipitation Peak flow (July) vs. east mountain weather station ¥661 79-15 EAST MTN PRECIPITATION S 3 Seking dischvikge (gew)



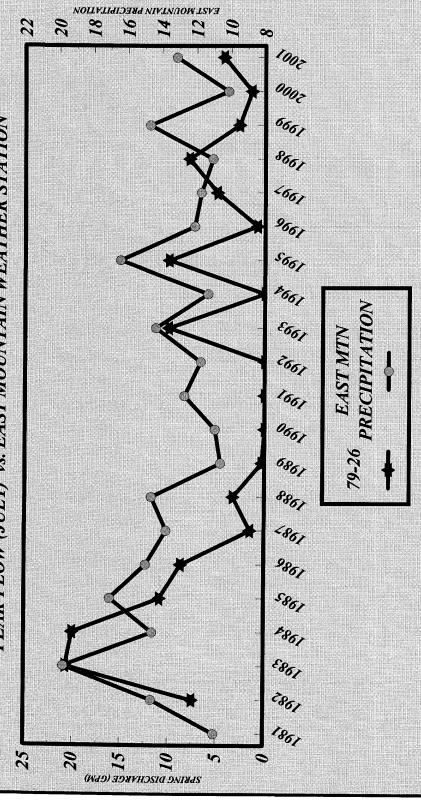
1002 0002 6<sub>6</sub> 80<sub>0</sub> √66/ 96<sub>6/</sub> <sub>2</sub>6√ \*66/ **79-23** <sup>c</sup>66∕ ç<sub>66</sub>∕ 100/ 0661 6<sub>6</sub> 80/ √86/ 9<sub>66</sub>7 ₹% တ ω 7 9 2 က ď 4 Spring Flow (gpm)

East Mountain Springs 79-23



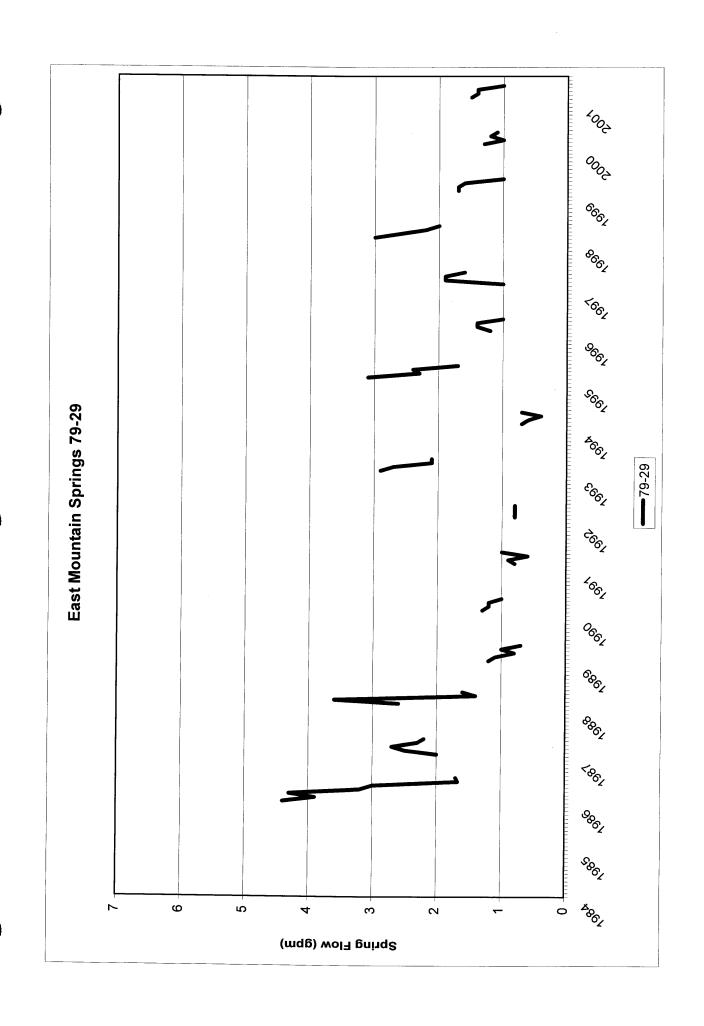
# EAST MOUNTAIN SPRINGS Spring: 79-26 vs. Precipitation





East Mountain Springs 79-26

### EAST MOUNTAIN PRECIPITATION EAST MOUNTAIN SPRINGS Spring: 79-29 vs. Precipitation PEAK FLOW (JULY) vs. EAST MOUNTAIN WEATHER STATION \$667 **PRECIPITATION** EAST MTN SPRING DISCHARGE (GPM)



## EAST MOUNTAIN PRECIPITATION EAST MOUNTAIN SPRINGS Spring: 79-32 vs. Precipitation Peak flow (July) vs. east mountain weather station BOOT 79-32 PRECIPITATION £667 EAST MTN #851 SPRING DISCHARGE (GPM)

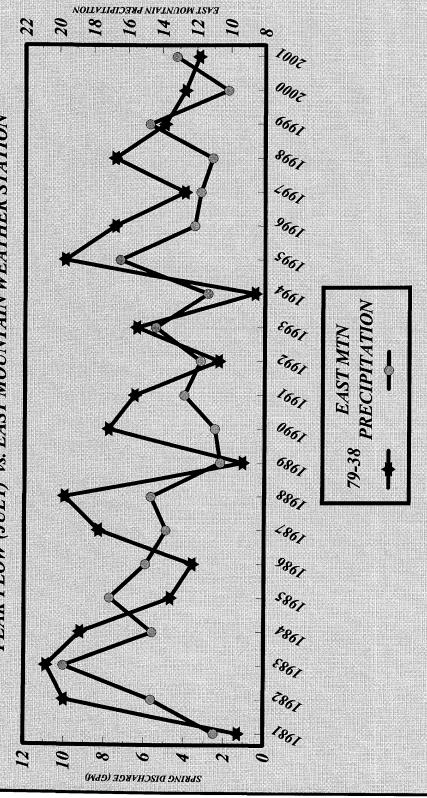
## EAST MOUNTAIN SPRINGS Spring: 79-34 vs. Precipitation Peak elow (July) vs. east mountain weather station × 5001 79-34 PRECIPITATION EAST MTN SPRING DISCHARGE (GPM)

## EVZI WONALVIA EKECIEIIVIION CONTRACTOR STATEMENTON TOOZ EAST MOUNTAIN SPRINGS Spring: 79-35 vs. Precipitation Peak flow (July) vs. east mountain weather station BO01 79-35 EAST MTN PRECIPITATION P861 2 9 0 9 7 SERING DISCHVINGE (GEW)

1002 6<sub>6</sub> 800/ √66/ 90<sub>6/</sub> <sub>2</sub>65/ \*66/ 79-35 <sup>6</sup>6€/ ç<sub>66</sub>∕ 100/ 066/ 6<sub>6</sub> &<sub>6</sub>6√ √861 Sol. <sub>2</sub>66<sup>√</sup> 10 12 ω ဖ 0 Spring Flow (gpm)

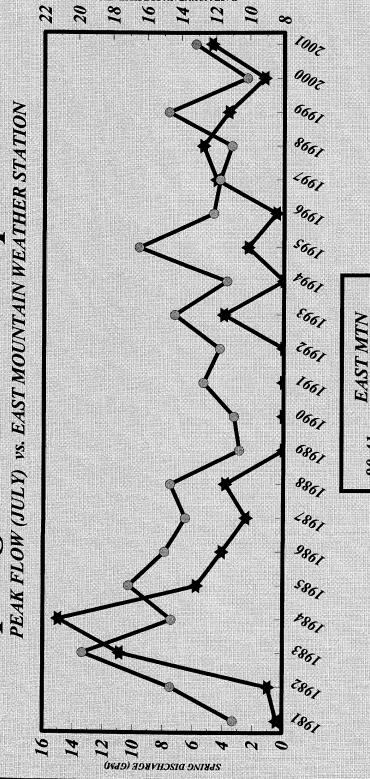
East Mountain Springs 79-35

# EAST MOUNTAIN SPRINGS Spring: 79-38 vs. Precipitation Peak elow (july) vs. east mountain weather station



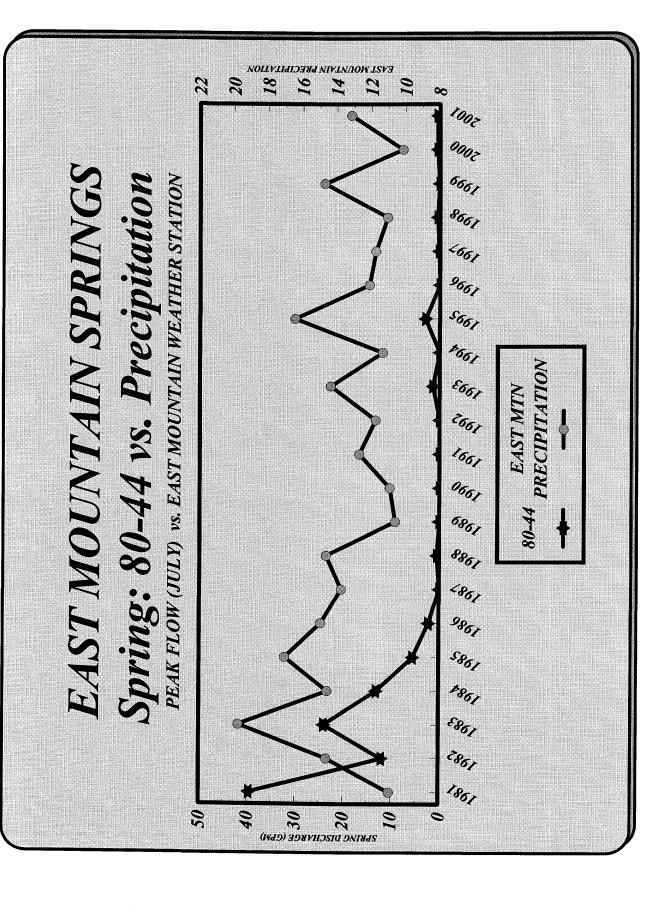
## EVZI WOUNTAIN EAST MOUNTAIN SPRINGS Spring: 79-40 vs. Precipitation Peak flow (July) vs. east mountain weather station P661 79-40 PRECIPITATION EAST MTN E851 SPRING DISCHARGE (GPM)

# EAST MOUNTAIN SPRINGS Spring: 80-41 vs. Precipitation



**PRECIPITATION** 

## EAST MOUNTAIN SPRINGS PEAK FLOW (JULY) VS. EAST MOUNTAIN WEATHER STATION Spring: 80-43 vs. Precipitation \$661 80-43 PRECIPITATION £667 **EAST MTN** SPRING DISCHARGE (GPM)



East Mountain Springs 80-44

## EAST MOUNTAIN SPRINGS Spring: 80-46 vs. Precipitation PEAK FLOW (JULY) VS. EAST MOUNTAIN WEATHER STATION P661 80-46 PRECIPITATION EAST MTN SPRING DISCHARGE (GPM)

1002 66<sub>6</sub>/ 80<sub>0/</sub> √66/ 900× <sub>2</sub>66<sup>√</sup> **-**80-46 <sup>6</sup>6€/ ç<sub>6√</sub> 100/ 066/ 6<sub>6</sub> 80/ <86/ SON, χ<sup>ος</sup>/ 30 25 20 15 9 2 0 Spring Flow (gpm)

East Mountain Springs 80-46

## ೲ EAST MOUNTAIN SPRINGS Spring: 80-47 vs. Precipitation Peak flow (July) vs. east mountain weather station P661 80-47 PRECIPITATION EASTMTN SPRING DISCHARGE (GPM)

### EAST MOUNTAIN SPRINGS Spring: 82-51 vs. Precipitation Peak flow (July) vs. east mountain weather station **PRECIPITATION** EAST MTN 82-51 E851 SPRING DISCHARGE (GPM)

### EAST MOUNTAIN PRECIPITATION EAST MOUNTAIN SPRINGS Spring: 82-52 vs. Precipitation Peak flow (july) vs. east mountain weather station P661 82-52 PRECIPITATION EAST MTN \*801 SPRING DISCHARGE (GPM)

1002 6<sub>6/</sub> &<sub>66</sub>√ <66/ 900/ \*66/ **82-52** <sub>6</sub>6√ ج<sub>وو</sub>ر 10<sub>6/</sub> 066/ 6<sub>6</sub> % € √86<sub>1</sub> 9<sub>6</sub> <sub>2</sub>66<sup>√</sup> 9 20 4 10 30 20 0 Spring Flow (gpm)

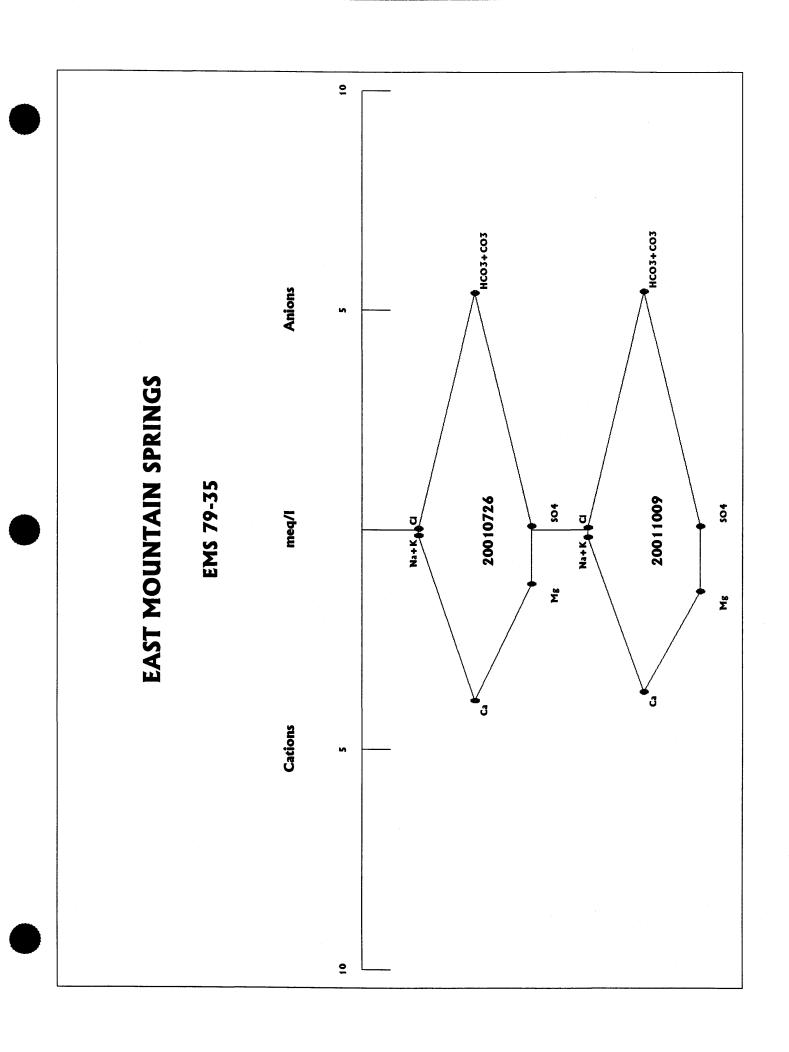
East Mountain Springs 82-52

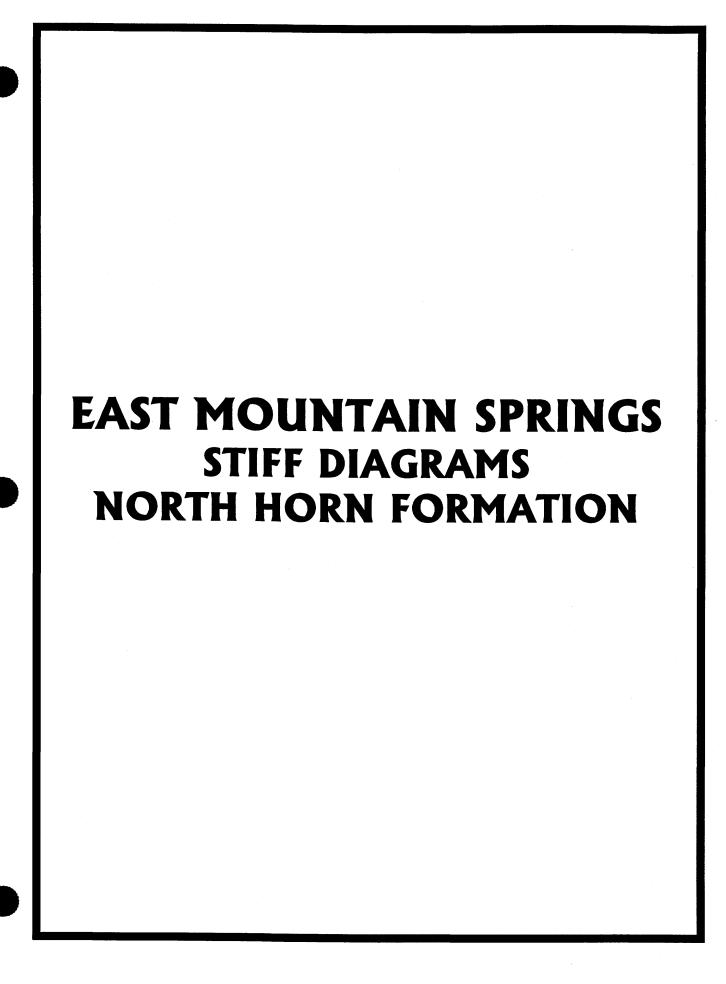
## EAST MOUNTAIN TOOZ EAST MOUNTAIN SPRINGS Spring: 84-56 vs. Precipitation Peak flow (July) vs. east mountain weather station ¥551 84-56 EAST MTN PRECIPITATION E807 SPRING DISCHARGE (GPM)

East Mountain Springs 84-56

## EAST MOUNTAIN SPRINGS STIFF DIAGRAMS FLAGSTAFF LIMESTONE

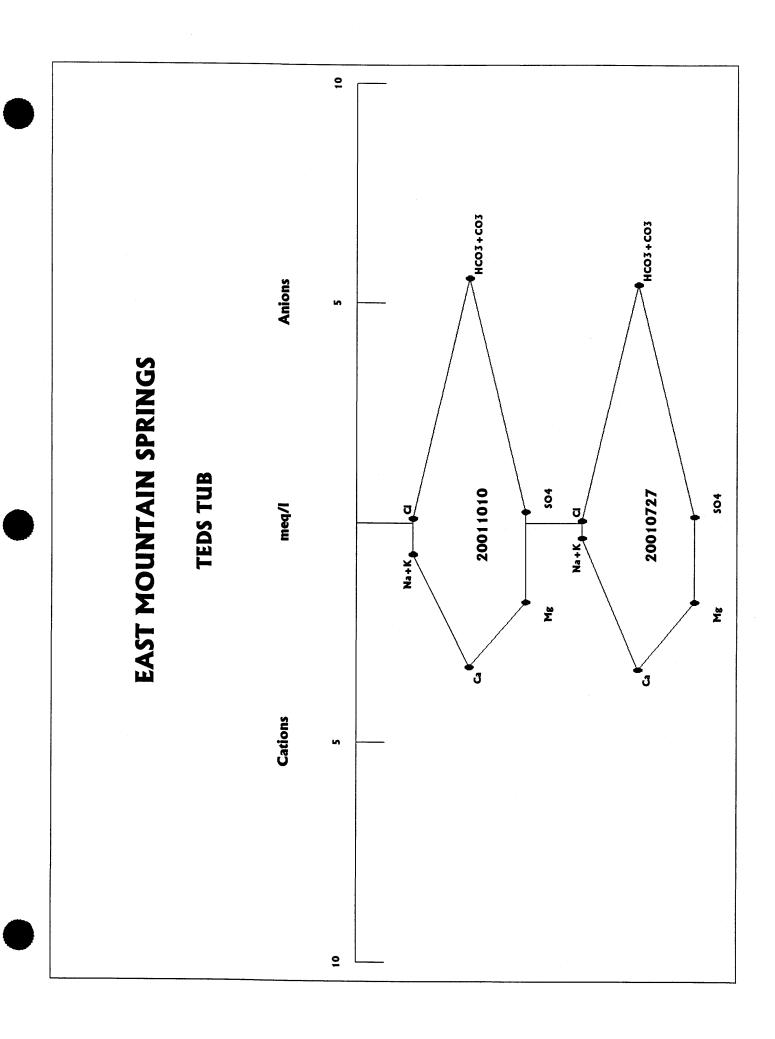
0 HC03+C03 HC03+C03 Anions 20 **EAST MOUNTAIN SPRINGS** SHEBA SPRINGS 20010726 20011010 \$04 **504** meq/l Na+K Na+K Σ Æ **Cations** 2

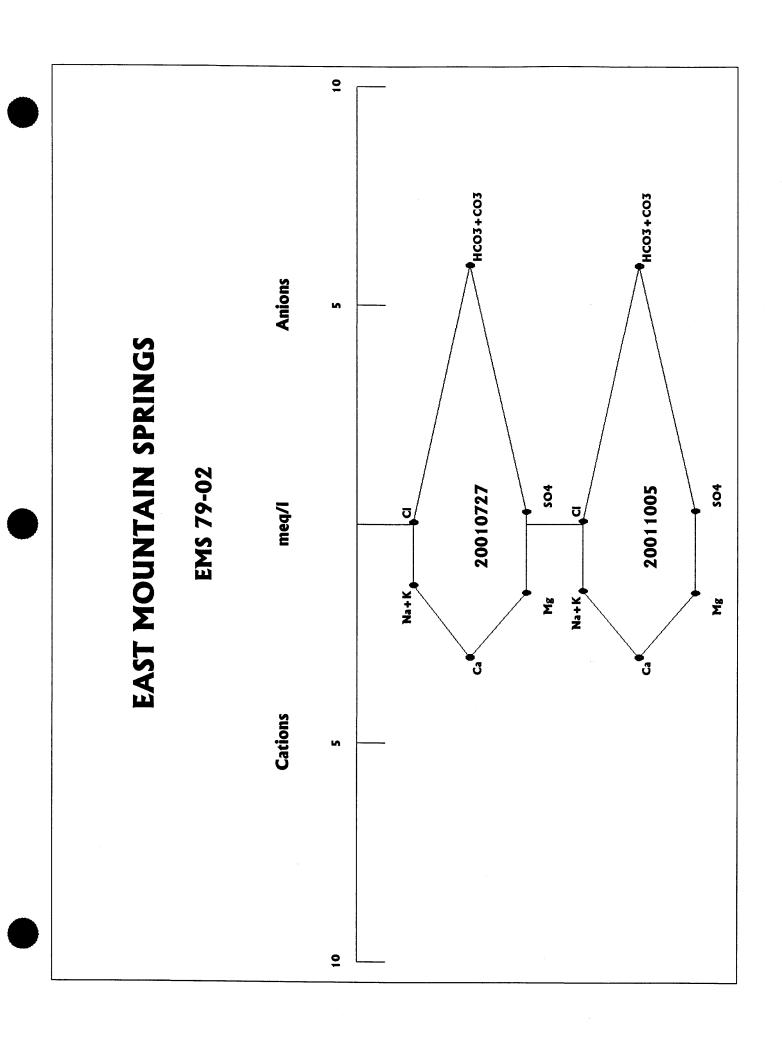




#### 9 → HCO3+CO3 HC03+C03 Anions **EAST MOUNTAIN SPRINGS BURNT TREE** 20010727 20011005 504 **504** meq/l ס Na+K Na+K Σ Σ J **Cations**

#### 2 HC03+C03 HCO3+CO3 Anions **EAST MOUNTAIN SPRINGS** ELK SPRING 20010726 20011009 **SO4** 504 meq/I Na+K Na+K Σ Σ Cations 9





#### 9 → HC03+C03 Anions **EAST MOUNTAIN SPRINGS EMS 79-10** 20010726 20011010 **504 \$04** meq/l Na+K C Na+K Σ Cations 0

#### 0 → HCO3+CO3 → HCO3+CO3 Anions **EAST MOUNTAIN SPRINGS** EMS 79-15 20010727 20011010 504 **5**0 meq/l Na+K Na+K CI Σ **X** Cations 10 <u>•</u>

#### 9 ₩ НСО3+СО3 ₩ HCO3+CO3 Anions 2 **EAST MOUNTAIN SPRINGS EMS 79-26** 20010725 20011008 **SO4 SO4** meq/l Na+K Na+K J Æ Σ **Cations** 10 9

#### 0 Anions **EAST MOUNTAIN SPRINGS 504 SO4 EMS 79-28** 20010726 20011010 meq/l Σ Æ **Cations** 0

#### 0 HC03+C03 ₩ HC03+C03 Anions **EAST MOUNTAIN SPRINGS 504 504 EMS 79-29** 20010726 20011009 meq/l Na + K Na +K **X** Œ **Cations** 10 9

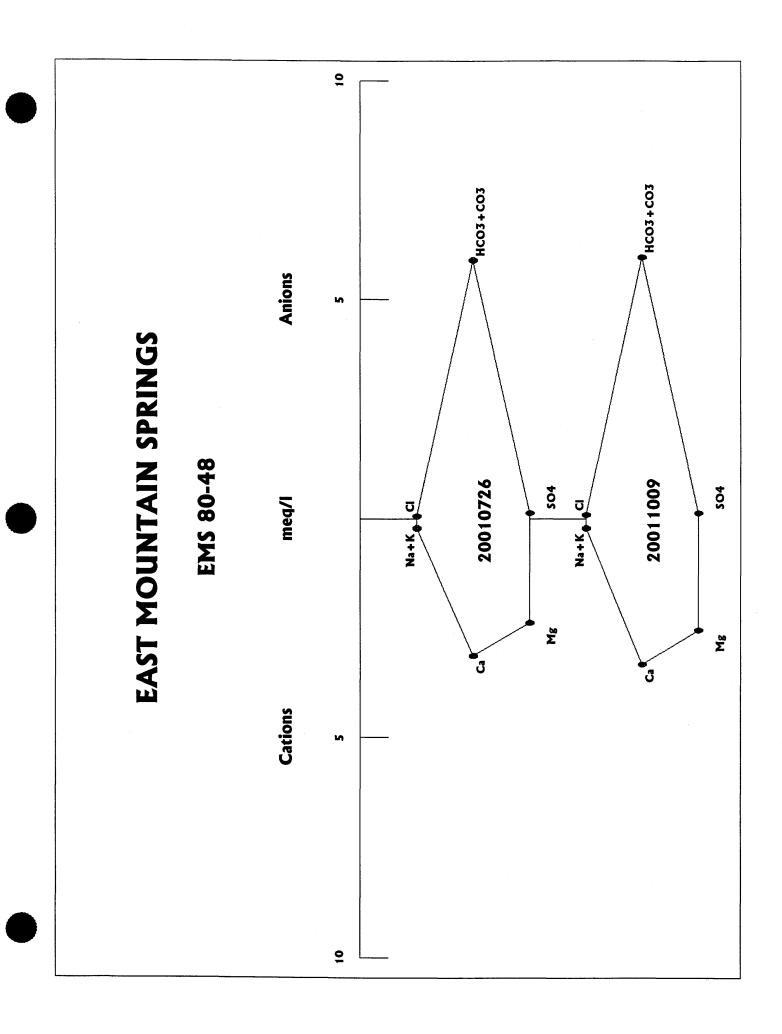
#### **⊕**HCO3+CO3 \*HCO3+CO3 EAST MOUNTAIN SPRINGS **Anions** S **504 504 EMS 79-32** 20010726 20011009 $\overline{\mathbf{0}}$ med/I $\overline{\mathbf{0}}$ Na+K Na+K **Cations** Ŋ 9

#### <u>0</u> → HCO3+CO3 <sup>2</sup>HCO3+CO3 **Anions** EAST MOUNTAIN SPRINGS **EMS 79-34 SO4 S04** 20011010 20010727 meq/I ס Na+K Na+K Σ Z **Cations** 9

#### **6** →HCO3+CO3 \*HCO3+CO3 EAST MOUNTAIN SPRINGS **Anions** 10 **EMS 79-38 504 504** 20011010 20010727 meq/I ū Na+K Σg Σg **Cations** Ŋ 0

#### 9 НСО3+СО3 Anions **EAST MOUNTAIN SPRINGS** Ca HCO3+CO3 **EMS 80-46** 504 20010727 meq/l Mg 504 7 Na+K CI Σ J **Cations** <u></u>

#### 9 € HCO3+CO3 <sup>36</sup> HCO3+CO3 **Anions** S **EAST MOUNTAIN SPRINGS EMS 80-47** 20010727 20011005 **504 SO4** meq/l ַ Na+K Na+K Σ Mg ű ű **Cations** 1 9



#### 9 ₩HC03+C03 ₩ HCO3+CO3 Anions **EAST MOUNTAIN SPRINGS EMS 84-56 S04 SO4** 20011010 20010727 meq/l ס Na+K Na+K Σ Σ ű ပီ **Cations** 'n 0

#### **5** → HCO3+CO3 <sup>3</sup> HCO3+CO3 Anions EAST MOUNTAIN SPRINGS **EMS 89-60** 20011010 **S04** 20010727 **SO4** meq/I Ū Na+K Na+K Σg Σg **Cations** Ŋ 0

#### 9 ₩НСО3+СО3 → HCO3+CO3 Anions **EAST MOUNTAIN SPRINGS EMS 89-61** 20010726 **SO4** 20011009 **504** meq/l ਹ Na+K Σ **Cations** 0

#### 9 ₩ HCO3+CO3 ₩HCO3+CO3 Anions **EAST MOUNTAIN SPRINGS EMS 89-65** 20010726 **504 S**04 20011009 meq/I Na+K Σg **Cations** 9

#### 9 Anions **EAST MOUNTAIN SPRINGS** Ca HCO3+CO3 **EMS 89-66** 20010726 504 meq/l Mg 504 Na+K C Σg **Cations** ĸ 9

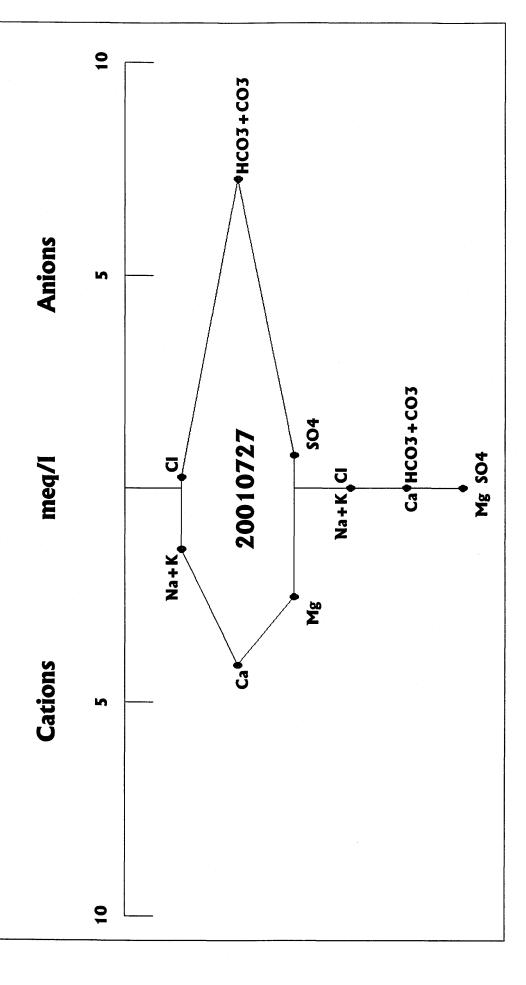
#### 9 HC03+C03 → HCO3+CO3 Anions **EAST MOUNTAIN SPRINGS EMS 89-67** 504 20010726 504 20011009 meq/l ס Na+K J Σg J Σ **Cations** 9

#### 9 ₩ HCO3+CO3 HCO3+CO3 Anions **EAST MOUNTAIN SPRINGS EMS 89-68** 20010726 20011009 **50 50** meq/l Na+K C Na+K **X** Σ Cations Ŋ 9

## EAST MOUNTAIN SPRINGS STIFF DIAGRAMS PRICE RIVER FORMATION

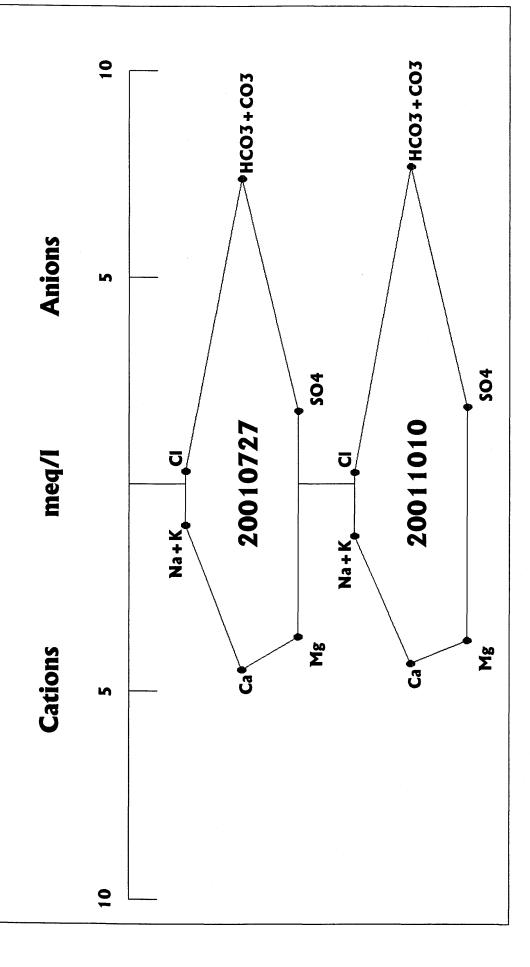
## EAST MOUNTAIN SPRINGS

## **EMS 79-40**



# EAST MOUNTAIN SPRINGS

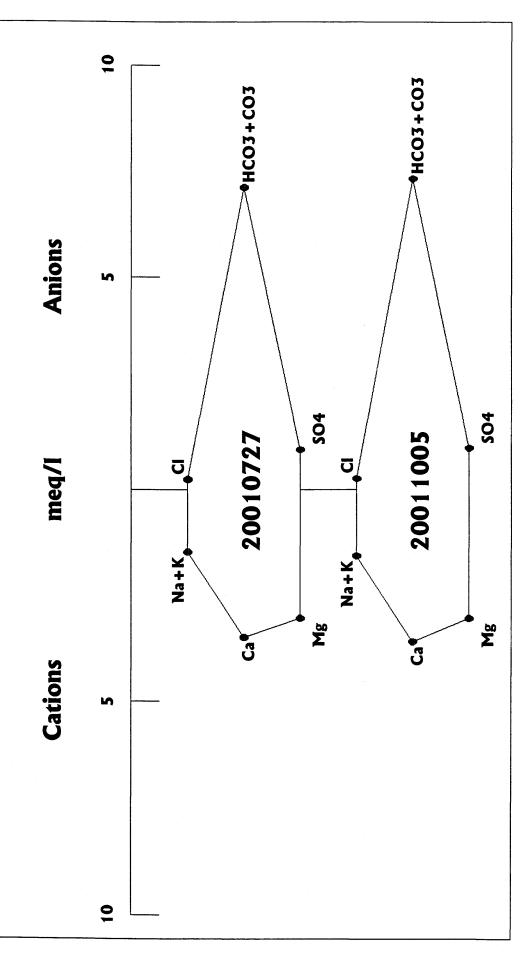
**EMS 80-41** 



#### 9 **₩**HCO3+CO3 **Anions EAST MOUNTAIN SPRINGS S04** Ca HCO3+CO3 **EMS 82-51** 20010727 ַ meq/l **Mg** 504 Na+K CI Na+K Σg **Cations** 9

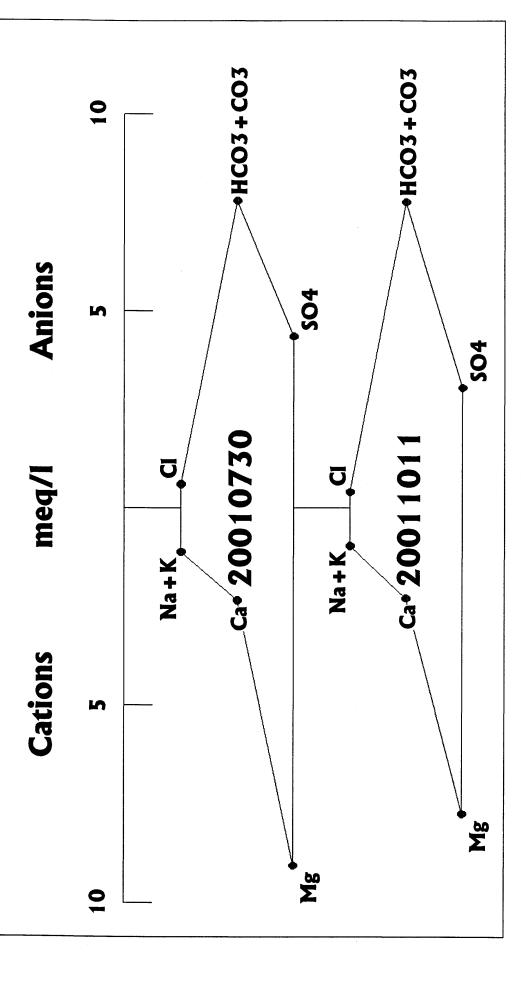
## EAST MOUNTAIN SPRINGS

### **EMS 82-52**

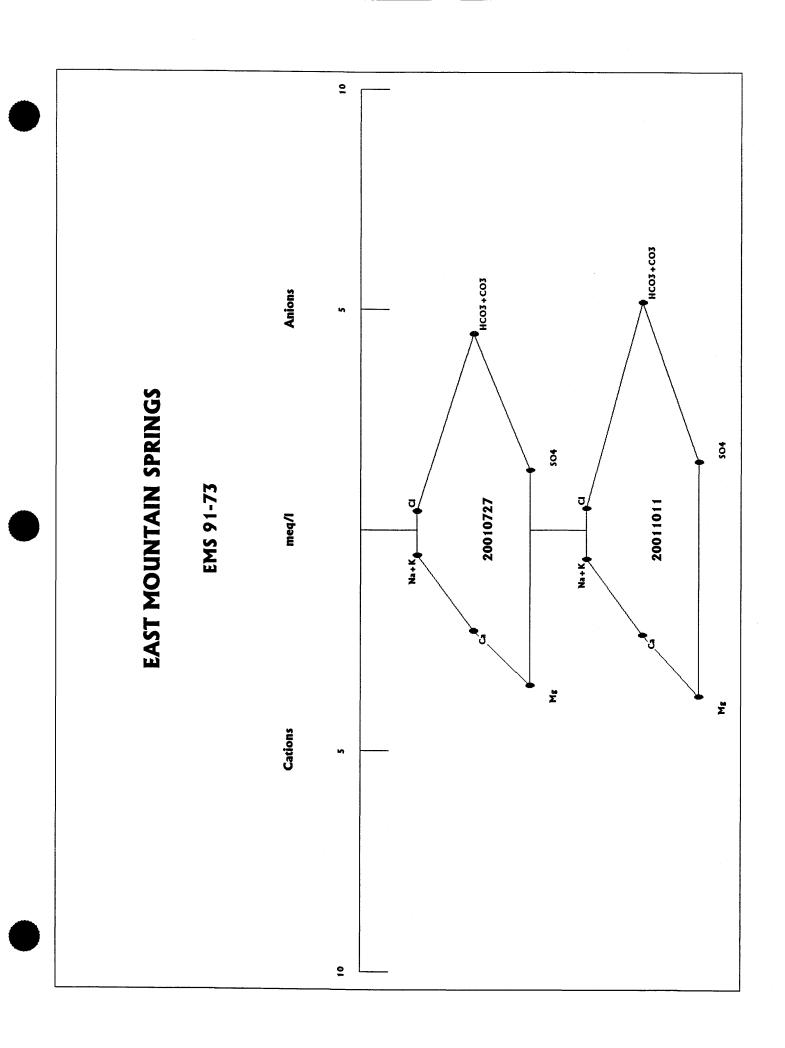


### EAST MOUNTAIN SPRINGS STIFF DIAGRAMS BLACKHAWK FORMATION

## EAST MOUNTAIN SPRINGS **EMS 80-50**



#### 9 **⊕**HCO3+CO3 ₩HC03+C03 **Anions** 10 EAST MOUNTAIN SPRINGS **SO4 S04 EMS 91-72** 20010727 20011011 ַ meq/I Na+K Na+K **Cations** Ŋ 9



### EAST MOUNTAIN SPRINGS STIFF DIAGRAMS RILDA CANYON ALLUVIUM

#### 10 <sup>3</sup> HCO3 + CO3 HC03+C03 EAST MOUNTAIN SPRINGS **Anions** 5 **SO4 S04** RILDA METER 2 20010629 20010917 meq/I ט Ū Na+K Na+K **Cations** Σ $\mathbf{Z}_{\mathbf{g}}$ 0

### 9 \*HCO3+CO3 **⊕HCO3+CO3 →HCO3+CO3** EAST MOUNTAIN SPRINGS **Anions SO4** RILDA METER 3 **SO4 SO4** 20010629 20010917 20011213 med/I ט ק ט Na+K Na+K Na+K Car Σg **Cations** 9

### TRAIL MOUNTAIN SPRINGS Spring 18-2-1 vs. Precipitation Peak flow (July) vs. east mountain weather station P661 £661 **PRECIPITATION** EAST MTN P861 E867 S SHING DISCHVIGE (GEW)

EAST MOUNTAIN PRECIPITATION

2000 866↓ 9661 766l 7661 18-2-1 0661 8861 9861 †86l 7861 1980 8761 0 4 10 ω ď ဖ 4 Spring Flow (gpm)

Trail Mountain Springs: 18-2-1

## TRAIL MOUNTAIN SPRINGS Spring 17-21-1 vs. Precipitation Peak flow (July) vs. East mountain weather station

EAST MOUNTAIN PRECIPITATION

\$661

t661

£667

*†861* 

£867

SPRING DISCHARGE (GPM)

66<sub>6</sub>/ 96<sub>6/</sub> <sup>c</sup>66∕ 17-21-1 066/ √86/ 1861 8/6/ 2.5 2.0 0. 0.5 0.0 Spring Flow (gpm)

Trail Mountain Springs: 17-21-1

### EAST MOUNTAIN PRECIPITATION TRAIL MOUNTAIN SPRINGS Spring 17-22-1 vs. Precipitation Peak flow (July) vs. east mountain weather station S661 P661 £661 **PRECIPITATION** EAST MTN P861 €861 S 2 SPRING DISCHARGE (GPM)

Sol. £66<sup>√</sup> <sub>6</sub>& 17-22-1 ç&√ 1861 0861 5 6/6/ 8/6/ 45.0 40.0 35.0 0.0 30.0 25.0 20.0 15.0 10.0 5.0 Spring Flow (gpm)

Trail Mountain Springs: 17-22-1

### TRAIL MOUNTAIN SPRINGS Spring 17-26-4 vs. Precipitation Peak flow (July) vs. East mountain weather station P661 £661 **PRECIPITATION** EAST MTN P861 £867 SPRING DISCHARGE (GPM)

66<sub>6</sub>/ 96<sub>6/</sub> <sup>6</sup>66∕ 17-26-4 066/ 50°/ 1861 8/6/ 0.8 0.7 9.0 0.5 0.0 0.4 0.3 0.2 0.1 Spring Flow (gpm)

Trail Mountain Springs: 17-26-4

### EVZL WODNIVIN BRECIBILVIION ∞ TRAIL MOUNTAIN SPRINGS Spring 17-25-1 vs. Precipitation Peak flow (July) vs. east mountain weather station P661 £667 **PRECIPITATION** EAST MTN ×861 SPRING DISCHARGE (GPM)

66<sub>6</sub>/ 96<sub>6/</sub> <sup>6</sup>66∕ 17-25-1 066/ √86/ 1861 8/6/ 2.5 2.0 1.5 0.5 0.0 Spring Flow (gpm)

Trail Mountain Springs: 17-25-1

EAST MOUNTAIN PRECIPITATION ∞ TRAIL MOUNTAIN SPRINGS Spring 17-26-5 vs. Precipitation Peak flow (July) vs. east mountain weather station S661 \$661 £667 **PRECIPITATION** EAST MTN P861 S SHING DISCHVRGE (CLW)

6<sub>6</sub> 9<sub>66/</sub> <sup>€</sup>66/ ----17-26-5 066/ <86/ 1861 8/6/ 0.0 0.8 9.0 0.5 0.7 0.4 0.3 0.2 0.7 0 Spring Flow (gpm)

Trail Mountain Springs: 17-26-5

### TRAIL MOUNTAIN SPRINGS Spring 17-35-1 vs. Precipitation Peak flow (July) vs. east mountain weather station *†661* £661 **PRECIPITATION** EAST MTN *†*861 €861 SPRING DISCHARGE (GPM)

9<sub>6</sub>67 <sub>2</sub>65<sup>√</sup> £86√ 17-35-1 ç,<sup>66√</sup> 1861 000/ 6/6/ 8/6/ 3.5 3.0 2.5 2.0 0.5 0.0 1.0 Spring Flow (gpm)

Trail Mountain Springs: 17-35-1

### EAST MOUNTAIN PRECIPITATION ∞ TRAIL MOUNTAIN SPRINGS Spring 17-35-2 vs. Precipitation Peak flow (July) vs. East mountain weather station \$66I **PRECIPITATION** EAST MTN *†861* 0.8 SPRING DISCHARGE (GPM) 0.2

Sol <sub>2</sub>66<sup>√</sup> ±0€/ <sub>6</sub>6√ 17-35-2 ç<sup>&6</sup>∕ 1861 080/ 6/6/ 8/6/ 1.0 0.9 0.8 0.0 0.7 9.0 0.5 0.4 0.3 0.2 0.1 Spring Flow (gpm)

Trail Mountain Springs: 17-35-2

### TRAIL MOUNTAIN SPRINGS Spring 17-14-4 vs. Precipitation PEAK FLOW (JULY) vs. EAST MOUNTAIN WEATHER STATION *†661* 17-14-4 (TM-23) PRECIPITATION £661 *†861* E867 SPRING DISCHARGE (GPM)

†66l 17-14-4 Spring Flow (gpm)

Trail Mountain Springs: 17-14-4

### Cottnwood Spring Flow Data

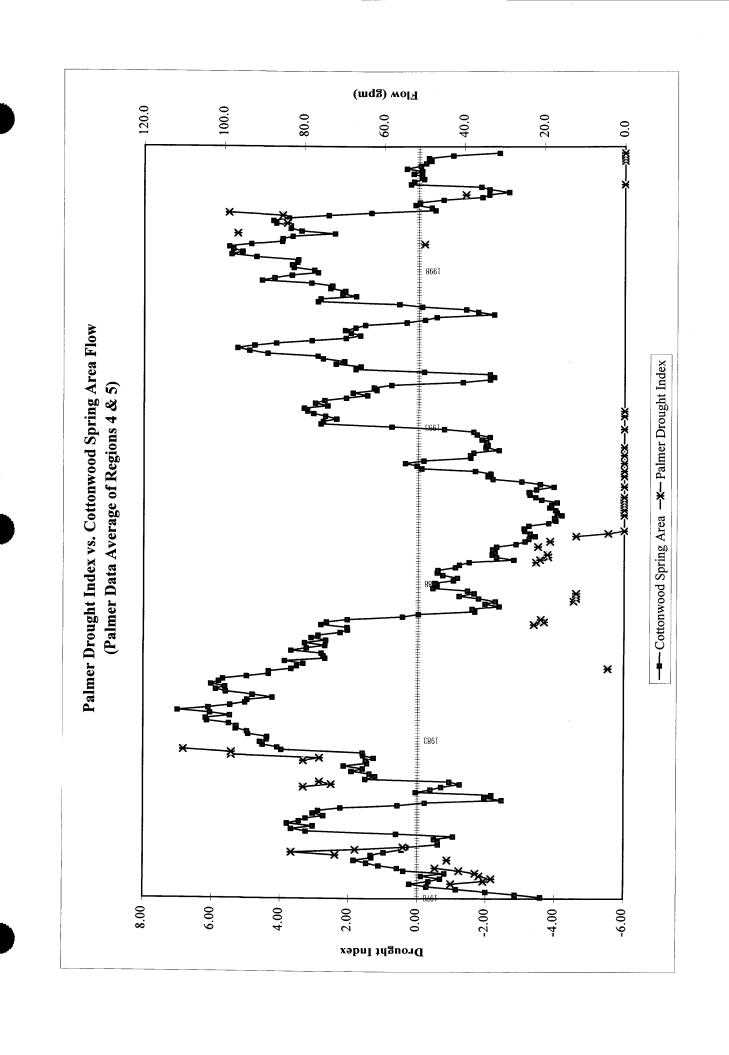
Source	
Flow (GPM)	
Source	
Flow (GPM)	22.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
Source	000MT 000MT 0000
Flow (GPM)	22.5 20.0 12.6 12.6 12.0
Source	AB.
Flow (GPIM)	0.4
Source USGS USGS USGS USGS USGS USGS USGS USG	
Flow (GPM) 43.0 43.0 43.0 43.0 33.0 33.0 33.0 38.0 44.0 44.0 44.0 72.0 83.0 64.0 65.0 76.0 76.0 76.0 98.0	
Date 06/08/1978 06/28/1978 07/10/1978 07/10/1978 08/08/1978 08/06/1978 10/09/1978 10/09/1978 10/09/1978 10/09/1978 07/06/1979 06/12/1979 07/14/1981 07/20/1981 06/23/1982 06/23/1982	09/26/1985 09/30/1986 10/20/1986 10/20/1987 06/30/1987 06/30/1987 09/25/1987 09/25/1988 10/31/1988 12/07/1988 12/07/1988 03/13/1989 05/25/1989 05/25/1989 06/25/1989 06/25/1989 09/7/19/1990 06/25/1989 09/7/19/1990 09/7/19/1990 09/28/1990

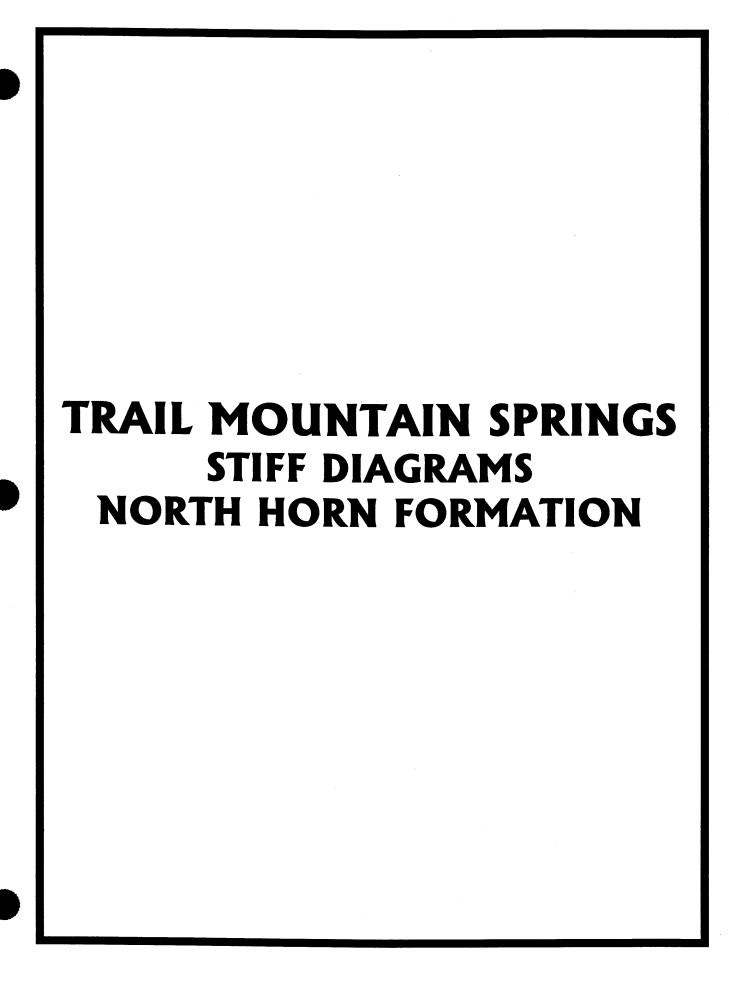
### Cottnwood Spring Flow Data

Source	ΕŃ	E E	EW	EW	ΕW	EW	EW	EW	EW	EW.	EW	EW	EW	EW	EW	EW	ΕW	ΕW
Flow (GPM)	0.0	0.0	0.0	0.0	0.0	0.0	57.8	2.96	84.4	49.2	85.5	6.86	39.7	0.0	0.0	0.0	0.0	0.0
Source BCCC BCCC BCCC BCCC																		
Flow (GPM) 0.0 0.0 0.0 0.0 0.0																		
Source																		
Flow (GPM)																		
Source																		
Flow (GPM)																		
Source																		
Flow (GPM)																		
Date 06/17/1991 08/23/1991 11/25/1991 02/25/1992	05/19/1993	07/21/1993	07/01/1994	07/01/1995	07/01/1996	07/01/1997	11/02/1998	03/26/1999	07/13/1999	08/30/1999	10/06/1999	11/10/1999	06/05/2000	10/18/2000	07/19/2001	08/27/2001	09/06/2001	10/10/2001

Sources: 1981- USGS 1982- USGS 1986- TMCC 1988- BCCC 1990- BCCC 1991- BCCC 1991- BCCC 1993- BCCC

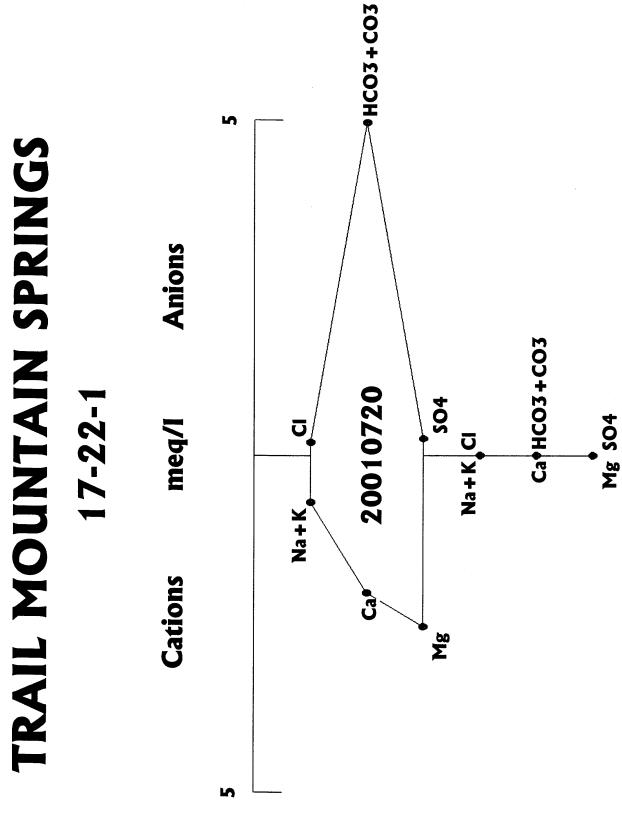
\* Difficulty Sealing Weir @ Below Roans Site, measuerd @ 49.2 GPM





### 0 ₩HCO3+CO3 ₩HC03+C03 **Anions** TRAIL MOUNTAIN SPRINGS **SO4 504** ū 20010720 20011010 18-2-1 meq/I Na+K **Cations** 10 9

### 9 <sup>→</sup> HCO3+CO3 <sup>20</sup> HCO3+CO3 Anions TRAIL MOUNTAIN SPRINGS ū **SO4** 20010719 20011010 17-21-1 **SO4** meq/I Σg $\mathbf{M}_{\mathbf{g}}$ ű ű **Cations** 9

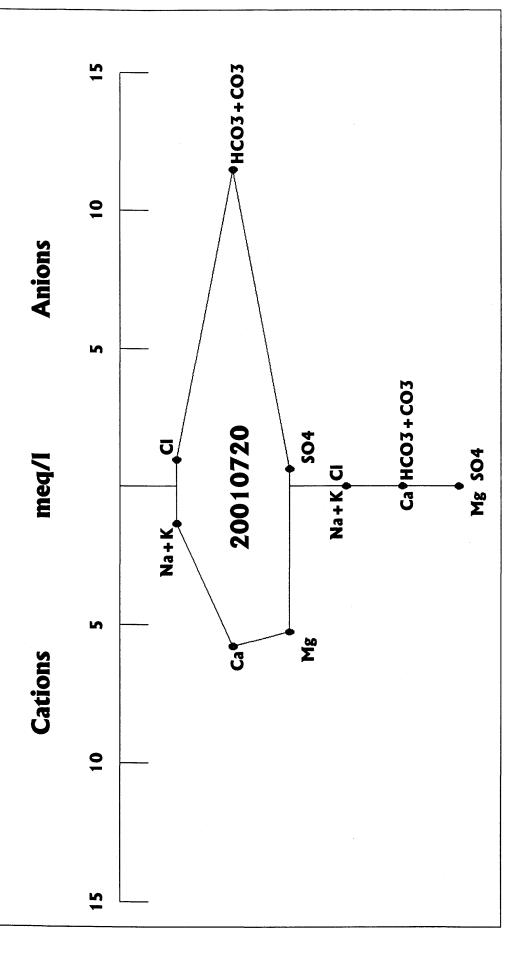


### 9 <sup>3</sup>HCO3+CO3 **Anions** TRAIL MOUNTAIN SPRINGS Ca HCO3+CO3 **SO4** ַס 17-26-4 20010720 **Mg 504** meq/I Na+K CI **Cations** <u></u>

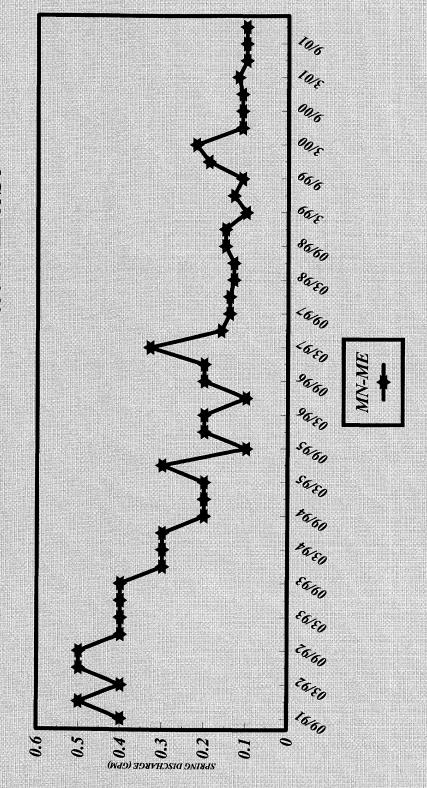


# TRAIL MOUNTAIN SPRINGS

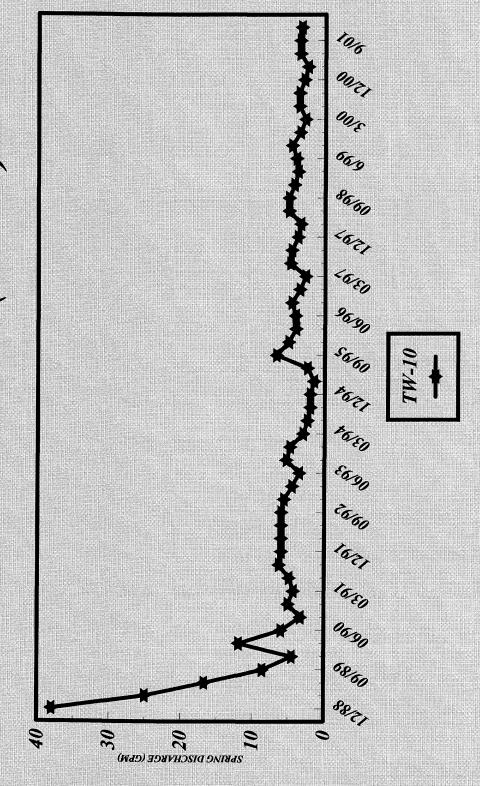
17-25-1



# Deer Creek In-Mine Monitoring Main North - Main East



## Deer Creek In-Mine Monitoring 3rd North xc-65 (TW-10)



	01	•HCO3+CO3	~HCO3+CO3	~HCO3+CO3	→HCO3+CO3
MINE	Anions 5		<b>504</b>	<b>504</b>	504
CREEK IN-MINE MN-ME	meq/I	Na+K, CI 20010328	Na+K, CI 20010926	Na+K CI 20011217	Na+K CI Historical
DEER (	Cations 5	3	E G	₩ See	Za Ca

10

504

Mg

## DEER CREEK IN-MINE **TW-10**

**Cations** 

0

meq/I

**Anions** 

Na+K CI

HCO3+CO3

20010328

**.**504 Na+K CI

20010926

.HCO3+CO3

Na+K C

20011217

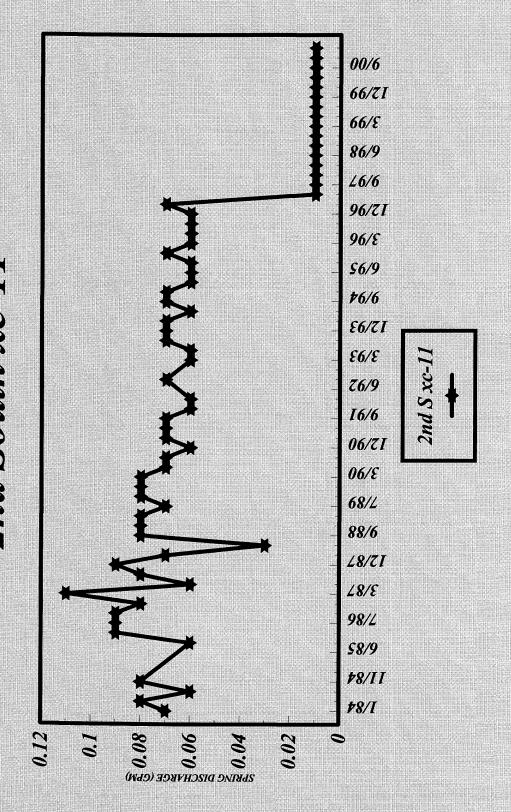
HC03+C03

Na+K CI

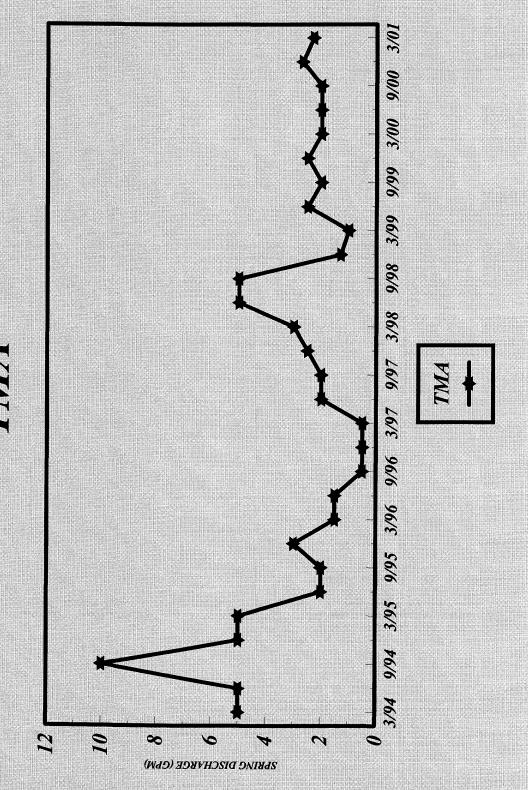
Historical

HCO3+CO3

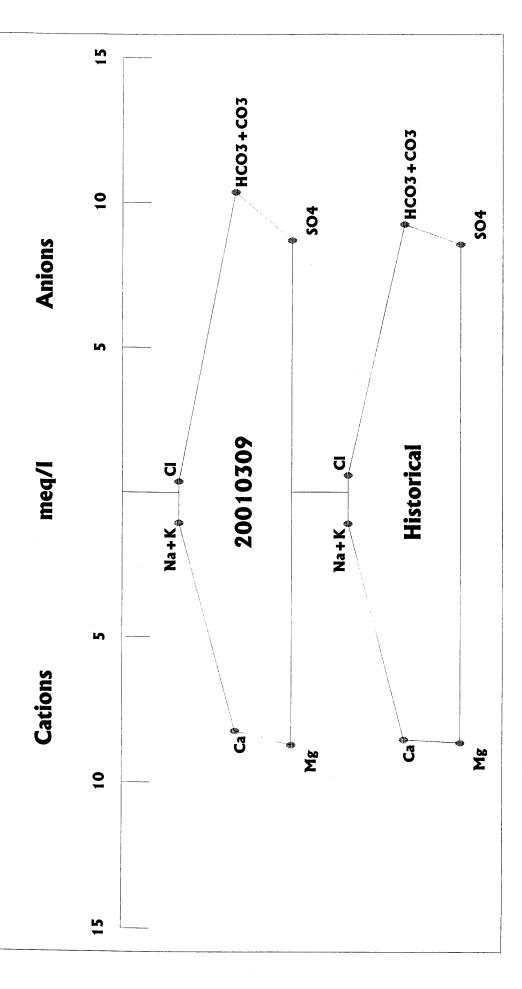
# Wilberg/Cottonwood In-Mine Monitoring 2nd South xc-11



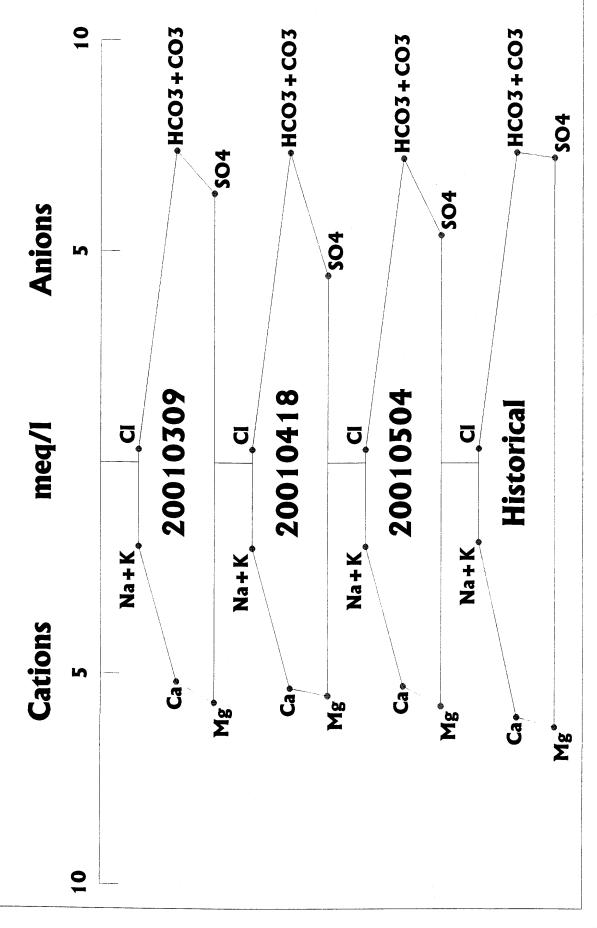
## Wilberg/Cottonwood In-Mine Monitoring TMA



## COTTONWOOD IN-MINE 2ND SOUTH X-11

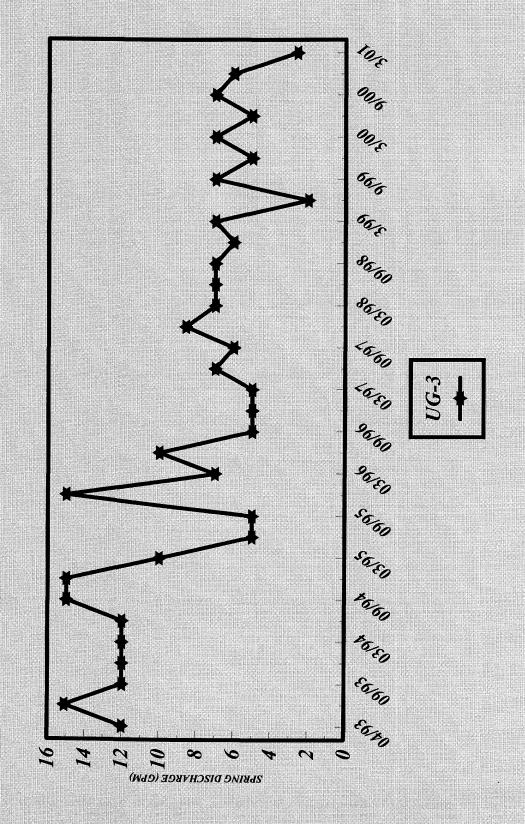


# COTTONWOOD IN-MINE TMA X-32



### APENDAL. 2001

# Trail Mountain In-Mine Monitoring UG-3



### 9 Anions TRAIL MOUNTAIN IN-MINE **S**04 **504** 20010309 Historical ng-3 meq/I Na+K Æ **Cations** 9

### 

### SURFACE PIEZOMETRIC DATA RILDA CANYON

	Rilda Canyon (EM-47)	EM-47)	P-1		P-4		P-5		P - 6		P - 7	
Collar Elevation	8,059.0		7,516.8		7,579.3		7,564.8		7,615.5		7,634.9	
Date	Reading	Level	Reading	Level	Reading	Level	Reading	Level	Reading	Level	Reading	Level
01/12/1999	9 210.2	7,848.8	22.7	7,494.1	DAMP		~	1 456 7	1 44 1	7 500 9	300	1 202 1
02/02/1999	9 Inaccessible	و	22.7	7.494.1	DAMP		. 6	7.556.6	44.1	2.002.0	59.3	7,595.4
03/03/1999	9 Inaccessible	. 0	22.6	7,494.2	DAMP		7	7 556 7	44.0	6.096,	7.14	7.595.7
04/05/1999		v	22.2	7.494.6	DAMP			7.556.7	45.5	7 690 7	47.4	5.245,1
05/11/1999	9 205.6	7,853.4	22.0	7,494.8	DAMP		76	7.557	44.7	7.500.7	42.7	1.246,1
6661/10/90	9 203.3	7,855.7	21.9	7,494.9	DAMP		7.6	2.155,7	. F	7.504.8	10.1	0.94.6
04/26/1999	202.0	7,857.1	22.3	7.494.5	DAMP		5. 4	7.766,7	30.1	0.44.0	24.0	7,110.9
08/12/1999	202.4	7,856.6	22.5	7.494.3	DAMP		7.0	7 556 0	30.7	7 505 7	23.3	7,110,4
06/03/1666	204.9	7,854.1	22.6	7,494.2	DAMP		7.8	7 557 0	30.65	7.505.7	£ 5¢	2,002
10/05/1999	206.0	7,853.0	22.9	7,493.9	DAMP		7.9	7 557 0	41.3	7.503.5	£ 05	0.600,1
11/17/1999	207.9	7,851.1	22.4	7,494.4	DAMP		0.80	7 556 8	44.6	7 500 3	20.2	7.504.7
12/9./1999	208.1	7,850.9	22.3	7,494.5	DAMP		7.5	7 557 3	45.3	7 580 6	42.8	7.503.7
01/11/2000	01/11/2000 Inaccessible	•	22.3	7,494.6	DAMP		0 80	7 556 8	45.9	7.580.0	42.8	7.766,1
02/03/2000	Inaccessible	•	22.3	7 494 5	DAMP		) o	2 556 9	46.3	7 600 7	7.44	0.096.7
03/09/2000	Inaccessible		Inaccessible	!	Inaccessible		O.O. Inaccarcible	0.000	1,0000001	0.000.	1.04	7,389.8
04/05/2000			Inaccessible		Inaccessible		Inaccessible		Inaccessible		Inaccessible	
05/03/2000		7.853.1	22.1	7 494 7	DAMP		7.0	0 733 L	maccessible 43.0		Inaccessible	
06/23/2000	203.2	7.855.8	22.5	7 494 3	DAMP		7.0	7.556.0	30.4	1.146,	31.2	1.166,1
07/06/2000	203.6	7.855.4	22.6	7 494 2	DAMP		7.9	7.556.0	39.6	2,595,7	24.7	7,010.7
08/07/2000	204.7	7,854.3	22.9	7.493.9	DAMP		; <del>-</del>	7 556 7	40.8	7.504.1	24.7	7,010,7
09/13/2000	205.6	7.853.4	22.7	7 494 1	DAMP			1.0000,1	6.04	1.946.1	0.67	7,503.3
10/10/2000	208.2	7,850.8	22.6	7,494.2	DAMP		e e	7.556.8	45.7	7.880.7	12.0	7.266,1
11/28/2000	Inaccessible		22.4	7,494.4	DAMP		7.4	7 557 4	46.6	7.500.7	45.0	1.190.5
12/05/2000	12/05/2000 Inaccessible		22.4	7,494.4	DAMP		8.0	7.556.9	46.6	7 588 3	45.4	7 589 5
01/02/2001	Inaccessible		22.5	7,494.3	DAMP		0	7 556 8	46.9	7 588 0	45.0	7 580 1
02/02/2001	Inaccessible		Inaccessible		Inaccessible	7	Inaccessible	2	Inaccessible	0.000.	Inaccessible	1.705.1
03/13/2001	Inaccessible		Inaccessible		Inaccessible	_	Inaccessible		Inaccessible		Inaccessible	
04/20/2001	Inaccessible		22.3	7,494.5	DAMP		7.9	7,556.9	47.1	7.587.8	46.1	7 588 0
05/07/2001	211.6	7,847.4	22.3	7,494.5	DAMP		7.8	7.557.1	44.2	7 590 R	19.4	7 595 5
06/29/2001	207.5	7,851.5	22.5	7,494.3	DAMP		7.6	7.557.2	39.9	7.595.0	27.2	7 607
07/11/2001	206.7	7,852.3	22.6	7,494.2	DAMP		7.7	7.557.1	39.8	7 595 1	26.5	7,608.4
08/07/2001		7,852.9	22.9	7,493.9	DAMP		7.8	7,557.0	39.9	7.595.0	27.4	7 607 5
09/12/2001	208.5	7,850.5	22.9	7,493.9	DAMP		7.8	7.557.0	42.9	7 592 0	37.4	2 7 8 9 7
		7,847.8	22.7	7,494.1	DAMP		7.8	7,557.1	44.3	7.590.6	13.0	7 591 9
11/09/2001	Inaccessible		22.7	7,494.1	DAMP		7.9	7,556.9	45.7	7.589.2	44.4	7.590.5
12/12/2001	2/12/2001 Inaccessible		22.4	7,494,4	DAMP		7.8	7,557.1	46.3	7,588.6	46.1	7,588.8

### SURFACE PIEZOMETRIC DATA COTTONWOOD CANYON

									3									
	EM-31		CCCW-1A	٧-١٨	22	CCCW-1S	ö	CCCW-2A	555	CCCW-3A	CCCW-3S U	0 SE-,	200	CCCW-3S L	Ä	TM-1B	É	TM-3
Collar Elevation	7417.8		7843.2		7844.5		8133.9		8369.7		8367.6		8366.0		7295.0 EST		6750.0 FST	
Date	Reading	Level	Reading	Level	Reading	g Level	Reading	Level	Reading	Level	Reading	Level	Reading	Level	Reading	Level	Reading	Fevel
01/11/10	-54.3	7363 \$	88	7755 1	1007	0 3376											•	
05/01/1999	-53.4	7364 4	83.3	7760.0	7 001-	0.000		8119.2	40.5	8329.3	-62.6	8304.9	-608.8	7757.2	-23.9	7271.1	-151.8	6598.2
03/01/1999	-53.5	73643	5 5 8	77577	2.661-	1,655.7		81194	40.5	8329.6	-62.5	83050	8 809-	7757.2	-23.8	7271.2	-152.6	6597.4
04/02/1999	. 54	71617	6.0	1751	-1884	7656.1	-14.5	8119.4	-40.3	8329.4	-62.8	8304.7	8.809-	7757.2	-23.8	7271.2	-152.9	6597.1
05/04/1999	-540	7.5057	6 8	7753 2	-188.4	7656.1	-14.6	8119.3	4.	8328.4	-63.1	8304.4	9'809-	7757.4	-23.8	2.1727	-152.4	6597.6
6661/20/90	-544	7363.5	2.0	7.6611	7.881-	7656.3	-14.6	81193	45.0	8327.7	-63.7	8303.9	-608.5	7757.5	-23.8	7271.2	-153.1	69659
07/23/1999	-553	7362.5	0.0	7.0077	. 88.	7656.2	8. <del>.</del> .	8120.1	-39.2	8330.6	-61.4	8306.2	8 809-	1757.2	-24.0	7271.0	-154.1	6 5659
08/27/1999	-55.4	7362 4		77510	. 188.5	7,0207	8.5	8120.1	39.1	8330.6	61.4	8306.2	-609.2	7756.9	-23.8	7271.2	-155.0	6595.0
09/03/1999	-55.2	7362 6		7751	100.2	1636.3	6.51-	8120.0	900	8329.8	-62.6	8305.0	-608.2	7757.8	-24.0	7271.0	-155.6	6594.4
10/04/1999	-56.0	7361.8	- 24.7	77.48 5	0.701-	7.000/	6.5	8119.9	40.6	8329.2	-62.7	8304.8	8.809-	7757.2	-24.0	7271.0	-155.5	6594.5
6661/11/11	-55.4	7362 4	8	7744.2	1000	7657	0.4.	8119.3	9	8328.7	-63.5	8304.0	-609.1	7756.9	-24.0	7271.0	-156.0	6594.1
12/03/1999	-553	7362 6	906	7743.6	1877	0.7607	80 2	1.6118	42.2	8327.5	-64.2	8303.4	0.609-	7757.1	-24.0	7271.0	-153.9	6596.1
01/10/2000	-55.3	3 6982	0.70	7745 3	101.	1000.8	-149	81190	42.3	8327.4	\$	8303.2	6 809-	1.757.1	-24.0	7271.0	-153.9	6596.1
02/02/2000		7363.0	. 6.	7750 1	7 001	7.050/		8.00	42.4	8327.3	\$ 45	8303.1	6'809-	7757.1	-23.9	2.17.27	-154.7	6595.3
03/06/2000		7363 3	Inscreedible		-100.4 Ingestitus		· ·	9.18	42.3	8327.5	<b>\$</b>	8303.0	-609.4	7756.6	-23.9	2.1727	-155.6	6594.4
04/05/2000		7363 1	-94.7	2 3777	100 4	•	Inaccessible	-	naccessible		Inaccessible	_	naccessible		-23.9	1.1727	-155.8	6594.2
05/05/2000		7363.0	Š	7746.7	1001-	1.000/	4.51-	8118.5	42.1	8327.6	-65.1	8302.5	-609.2	7756.9	-23.9	7271.1	-156.1	6594.0
06/13/2000		7362.0	8001-	7747 4	001-	1,000,1	9.51-	8118.3		8325.9	-65.5	8302.0	-609.2	1756.8	-24.0	0.1727	-156.4	6593.6
01/06/2000		7361.8	-103 2	7740.0	0.001	7,6507	9.51	0.118.0		8325.2	999-	8301.0	-608.5	7757.5		2.1727	-157.3	6592.7
08/09/2000	-56.5	7361.4	-106.5	7736.8	-1892	7655 3	164	8117.5	0.04	8324.1	-67.1	8300.5	-609.4	7756.6		2.1727	-157.5	6592.5
0007/11/60	-56.3	7361.5	-1083	7735 0	-189 5	0.5597	2 4	0117.	200	8323.4	6.79	8299.7	9 609-	7756.4				6291.9
10/10/2000	-56.1	7361.7	-109.5	7337	-1894	7655 1	17.0	17110	604	8322.9	-68.5	8299.1	-609.7	7756.4	-			8 1659
11/28/2000	-51.1	7366.8	-108.6	77346	-1808	76547	7 7	6.0110	;	6322.5	8 90	8298.7	-609.4	7756.6				6592.5
12/04/2000	-51.3	7366.5	-108 5	7734.7	1900	7654 5		0.0110	4	8322.0	-69.5	8298 4	1.609-	7756.3				6595.5
01/03/2001	-51.7	7366.1	-105.1	7738 1	1001-	7654.4	17.5	6116	7.7	8322.0	-69.3	8298.3	6 609-	1756.1				6597.2
02/02/2001	-51.7	7366.1	-102.4	77408	-1808	76547	.176	9110	0.74	8322.1	-69.3	8298.2	-610.0	7756.0				6605.4
03/08/2001	-51.4	7366 4	-103.0	7740.2	1900	7654 5		6.0119	<b>.</b>	0.120	0.60	0.8678	8 609-	7756.2				6613.7
04/05/2001	-53.7	7364.1	966-	7743 6	1899	7654.6	971	0110		9371.6	6.69-	8297.7	6 609-	7756.2		. 2.11.21		60799
05/01/2001	-55.0	7362.9	6 66-	7743 3	100	7654.4	2 2	60110	ę ;	8321.7	4 69	8298.1	-609	7756.3		7271.3	122.6	6627.4
06/25/2001		73616	104.8	77.18 5	200	7664		1 9118	48.0	8321.1	-70.0	8297.6	-610.1	7755.9	-23.7 7	. 6.172	115.6	6634.5
07/05/2001		73617	106.3	0 91.77	0.061	7664.3	7 2	20118		8320.8		8297.5	-610.0	7756.0	•	. 6.1727	_	6645.0
08/10/2001		7350 7		7333 7	1.001	1.100	0.0	6(118)		8320.8		8297.5	-609.2	7756.9	-23.7 7	. 6.1727	103.1	6646.9
09/11/2001		7360.7		0 5 5 5 5	1001	1.604	5	8115.6		8320.7		82970	-610.2	7755.8	-23.9 7	1.1727	-96.5	6653.5
10/03/2001		7360.0		0.007	0.061-	6.600/	0 2	8115.2		8320.9		8296.6	-610.2	7755.8	-24.0 7	0.1727	-91.0	0.6599
1002/2011		6.0007		0.66//	5061-	/654.0	-18.6	8115.3		8320.2	-71.2	8296.3	-610.3	7755.7	-24.1 7	6,0127		66613
1002//01/11		0.755		1132.0	6061	7653.6	-19.4	8114.5		8319.9	-72.6	8295.0	9.019-	7755.4	-23.8 7	. 1727		0 2999
107/01/01		1302.6		7732.5	-1903	7654.2	-19.0	8114.9		8319.7	-71.7	8295.9	6.609-	7756.2	•	271.3		0 (299
00/03/50/2		/362.3		7732.8	-190. <b>8</b>	7653.7	-19.2	8114.7	-50.2	1319.5	-71.8	8295.8	-610.4	7755.7	•	211.2		27700
7007/50/70	-54.1	7363.7	-110.2	7733.0	-161	7653.4	-193	8114.6	-50.2	8319.5		8295.6	-610.4	7755 6	•	17.1		0.470
															•			6.6.0

### DEER CREEK IN -MINE PIEZOMETRIC DATA

	DCP - 1 3rd N. xc-8		DCP - 2 3rd N. xc-29		DCP - 3 3rd N. xc-55		DCP - 4 1st WM xc-29	
Elevation DRILL	7530		7567		7577		7529	
DEPTH	155.4		170.5		148.9		169.6	
Date	Reading	Level	Reading	Level	Reading	Level	Reading	Level
12-15-95	0.0	7530.0						
03/29/1996	0.1	7530.1						
06/19/1996	0.0	7530.0						
09/30/1996	0.0	7530.0						
12/12/1996	1.6	7531.6						
03/27/1997	1.6	7531.6						
06/30/1997	1.6	7531.6						
09/25/1997	1.6	7531.6						
12/09/1997	1.6	7531.6						
03/30/1998	1.6	7531.6						
06/22/1998	1.6	7531.6						
09/23/1998	1.6	7531.6						
12/22/1998	1.6	7531.6						
03/29/1999	1.6	7531.6						
06/25/1999	1.6	7531.6						
09/29/1999	1.6	7531.6						
12/13/1999	1.6	7531.6						
03/30/2000	1.6	7531.6						
06/16/2000	1.6	7531.6						
09/20/2000	1.6	7531.6						
12/12/2000	1.6	7531.6						
03/15/2001	1.6	7531.6						
06/18/2001	1.6	7531.6						
09/26/2001	1.6	7531.6						
12/17/2001	1.6	7531.6						

<sup>\*</sup> Area inaccessible

<sup>\*\*</sup> Monitoring discontinued, hole caved @ 38'

<sup>\*\*\*</sup> Monitoring discontinued, entry used to access to 8th East

<sup>\*\*\*\*</sup> Monitoring discontinued, area sealed

### WASTE ROCK DISPOSAL WELLS DATA

DEER CREEK
DCWR1

WILBERG\COTTONWOOD WCWR1

* Collar		Elevations Adjusted 12/90		· · · · · · · · · · · · · · · · · · ·	
Elevation	6313.4			6774.5	
Date	Reading	Level	Date	Reading	Level
03/17/1998	-7.5	6305.9	12/10/1998	-41.88	6722.6
06/09/1998	-7.0	6306.4	03/01/1999	-42.4	6732.6 6732.1
09/15/1998	-6.2	6307.2	06/09/1999	-47.48	6727.0
12/07/1998	-6.0	6307.4	09/09/1999	-50.04	6724.5
03/04/1999	-6.0	6307.4	12/08/1999	-51.34	6723.2
06/17/1999	-7.5	6305.9	03/08/2000	-51.86	6723.2
09/09/1999	-7.5	6305.9	06/15/2000	-51.80 -51.84	6722.7
12/14/1999	-7.8	6305.6	09/13/2000	-52.2	6722.7
03/10/2000	-7.5	6305.9	12/04/2000	-44.62	6729.9
06/20/2000	-8.6	6304.8	03/08/2001	-44.02	6730.3
09/25/2000	-8.3	6305.1	06/26/2001	-46.18	6728.3
12/05/2000	-8.3	6305.1	09/20/2001	-50.18	
03/13/2001	-5.3	6308.1	12/12/2001	-50.18 -51.35	6724.3
06/29/2001	-7.2	6306.2	12/12/2001	<del>-</del> 51.55	6723.2
09/17/2001	-6.9	6306.5			
12/13/2001	-6.5	6306.9			

### COTTONWOOD CANYON CREEK FLOW & QUALITY

SW-1

	<	******	Field Measu	ırements		>	1	
			Flow		Cond.	Dis.	ļ	
Date	Time	Temp. (oC)	GPM	pН	(uS)	Oxygen	Weather	Comments
01/05/1999	1034		_					
02/01/1999	1433		200				clear30's	
03/01/1999			200				clear30's	
04/07/1999	1059	3.1	210	7.92	549	6.1	clear40's	
05/05/1999	1108		200				cloudy40's	
06/08/1999	1345		320				ptcloudy50's	
07/16/1999	1058	6.6	1100	7.92	453	7.9	ptcloudy60's	
08/03/1999	1455		310				cloudy 70's	
09/02/1999	1319		300				cloudy60's	
	1308	10.6	235	8.13	449	6.6	ptcloudy60's	
10/04/1999 11/01/1999	1403		200				clear70's	
	1314		200				clear60's	
12/06/1999	1306	-0.4	200	7.44	499	10.8	clear30's	
01/11/2000	1043		200				cloudy40's	
02/02/2000	1104		200				ptcloudy40's	
03/06/2000	1249	I	NACCESSI	BLE SNOW			snow30's	
04/05/2000	1044		250				clear40's	
05/05/2000	1422		300				clear60's	
06/12/2000	1325	13.3	70	7.94	463	10.8	cloudy80's	
07/06/2000	1137		80				clear80's	
08/09/2000	1328		60				ptcloudy90's	
09/12/2000	1346	15.6	60	8.33	486	7	clear80's	
10/10/2000	1055		40				cloudy50's	
11/06/2000	1050		30				cloudy30's	
12/04/2000	1111		Frozen				clear30's	
01/03/2001	1052		Frozen				clear30's	
02/05/2001	1120		15			l	clear30's	
03/08/2001	1225	7.5	30	8.15	803	2.3	clear40's	
04/05/2001	1235		65		005	2.3	cloudy40's	
05/09/2001	1112		110				clear60's	
06/06/2001	1048	8.6	175	7.69	579		clear60's	
07/05/2001	1349		70		577			
08/14/2001	1408		30				ptcloudy80's clear80's	
09/20/2001	1035	8.1	1	8.42	729			
10/03/2001	1151		1	J., <u>.</u>	12)	ļ	clear80's	
11/09/2001	1119		4				clear70's	
12/10/2001	1330		Frozen				clear40's	
							cloudy20's	

### COTTONWOOD CANYON CREEK FLOW & QUALITY

SW-2

	<	]	Field Meası	urements		>		
Date	Time	Temp. (oC)	Flow		Cond.	Dis.		
	111110	remp. (oC)	GPM	pН	(uS)	Oxygen	Weather	Comments
01/05/1999	1043		205					
02/01/1999	1451		395 330				clear30's	
03/01/1999	1118	8.3	830 830	0.15			clear30's	
04/07/1999	1113	0.5	446	8.17	1054	6.1	clear40's	
05/05/1999	1350		520				cloudy40's	
06/08/1999	1114	6.2	1200	0.15			ptcloudy50's	
07/16/1999	1459	0.2	790	8.17	467	7.9	ptcloudy60's	
08/03/1999	1324		335				cloudy70's	
09/02/1999	1320	12	625	0.4			cloudy60's	
10/04/1999	1416	12	238	8.4	924	6.5	cloudy60's	
11/01/1999	1318		239				clear70's	
12/06/1999	1348	-0.4	203				clear60's	
01/11/2000	1059	-0.4	320	7.44	571	11.5	clear30's	
02/02/2000	1119		212				cloudy40's	
03/06/2000	1308	3	190	0.00			ptcloudy40's	
04/05/2000	1052	3	830	8.22	982	7.3	cloudy30's	
05/03/2000	1312						clear40's	
06/12/2000	1345	11.7	560	0.00			clear60's	
07/06/2000	1150	11.7	115	8.32	503	11.1	clear80's	
08/09/2000	1344		690				clear80's	
09/12/2000	1359	22.9	260				ptcloudy90's	
10/10/2000	1109	22.9	280	8.72	1068	7.7	clear80's	
11/06/2000	1055		590				cloudy50's	
12/04/2000	1122	9.1	627				cloudy30's	
01/03/2001	1108	7.1	308	8.16	1198	10.4	clear30's	
02/05/2001	1202		103				clear30's	
03/08/2001	1312	6.5	20				clear30's	
04/05/2001	1247	0.5	112	8.47	956	3.1	clear40's	
05/09/2001	1116		80				cloudy40's	
06/06/2001	1104	8.6	114				clear60's	
07/05/2001	1400	0.0	185	8.22	615		clear60's	
08/14/2001	1412		60				ptcloudy80's	
09/20/2001	1121	11.0	50				clear80's	
10/03/2001	1203	11.9	20	8.66	1009		clear80's	
11/09/2001	1142		26				clear70's	
12/12/2001	1025	4.1	49				clear40's	
	1023	4.1	40	8.07	955	13	clear20's	

### COTTONWOOD CANYON CREEK FLOW & QUALITY

SW-3

	<	******	Field Meası	rements		>	1
_			Flow		Cond.	Dis.	
Date	Time	Temp. (oC)	GPM	pН	(uS)	Oxygen	Weather Comments
01/05/1999	1054					<del></del>	
02/01/1999	1500		405				clear30's
03/01/1999	1142		340				clear30's
04/07/1999		6.4	835	8.36	1026	5.9	clear40's
05/05/1999	1122		450				cloudy40's
06/08/1999	1400		523				ptcloudy50's
07/16/1999	1142	9	1255	8.42	621	7.6	ptcloudy60's
08/03/1999	1512		800				cloudy70's
09/02/1999	1337		341				cloudy60's
	1348	14.8	634	8.69	881	6.2	cloudy60's
10/04/1999	1426		243				clear70's
11/01/1999	1330		245				clear60's
12/06/1999	1417	0.5	209	8.55	1122	10.6	clear30's
01/11/2000	1105		328				cloudy40's
02/02/2000	1129		220				ptcloudy40's
03/06/2000	1339	1.5	199	8.34	2390	8.9	cloudy30's salt from road
04/05/2000	1052		838				clear40's
05/03/2000	1324		569				clear60's
06/12/2000	1410	17.4	119	8.77	1079	9.6	cloudy80's
07/06/2000	1156		699			- 10	clear80's
08/09/2000	1351		270				ptcloudy90's
09/12/2000	1430	18.4	293	9.08	1150	7.1	clear80's
10/10/2000	1117		601			,,,	cloudy50's
11/06/2000	1102		633				cloudy30's
12/04/2000	1141	-0.2	318	8.32	1195	10.4	clear30's
01/03/2001	1119		110	5.52	11,55	10.4	clear30's
02/05/2001	1210		Frozen				
03/08/2001	1336	7.9	121	8.64	1064	3.8	clear30's
04/05/2001	1300		88	0.04	1004	3.6	clear40's
05/09/2001	1125		120				cloudy40's
06/06/2001	1127	13.5	197	8.3	822	ŀ	clear60's
07/05/2001	1409		58	0.5	022		clear60's
08/14/2001	1412		50			İ	ptcloudy80's
09/20/2001	1146	14.5	38	8.43	1010		clear80's
10/03/2001	1210	•	31	8.43	1910		clear80's
11/09/2001	1159		51 54				clear70's
12/12/2001	1040		Frozen				clear40's
·	- • • •		riozen				clear20's

### COTTONWOOD CANYON CREEK @ USGS FLUME CCC01

	<	F	ield Meas Flow	urements	>		<b>.</b> .	
Date	Time	Temp. (°C)	ft.	GPM	pН	Cond.	Dis.	
				OI W	- Pri	(uS)	Oxygen	Weather
01/05/1999	1050			400				clear30's
02/01/1999	1454			339				
03/01/1999	1131	7		834	8.52	1001	5.7	clear30's
04/07/1999	1117			448	0.52	1001	3.1	clear40's
05/05/1999	1354			522				cloudy40's
06/08/1999	1126	8		1253	8.27	454		ptcloudy50's
07/16/1999	1431			798	0.27	454		ptcloudy60's
08/03/1999	1330			339				cloudy70's
09/02/1999	1336	13		631	8.61	000	ł	cloudy60's
10/04/1999	1421			241	0.01	888		cloudy60's
11/01/1999	1323			241				clear70's
12/06/1999	1359	2		207	7.4	620		clear60's
01/11/2000	1101	-		326	7.64	632	11.2	clear30's
02/02/2000	1125							cloudy40's
03/06/2000	1314	2		218	0.51	1000		ptcloudy40's
04/05/2000	1056	-		197	8.51	1333	7.2	cloudy30's
05/03/2000	1317			834				clear40's
06/12/2000	1356	15		567	0.4			clear60's
07/06/2000	1153	13		117	8.67	787	9	cloudy80's
08/09/2000	1346			696			İ	clear80's
09/12/2000	1417	18		264				ptcloudy90's
10/10/2000	1112	10		289	9.05	1122	7.2	clear80's
11/06/2000	1059			599				cloudy50's
12/04/2000	1130	4		631				cloudy30's
01/03/2001	1113	4		314	7.9	1172	10.2	clear30's
02/05/2001	1205			100				clear30's
03/08/2001			f	rozen-no flo	w			clear30's
04/05/2001	1320	8		117	8.84	1008	3	clear40's
05/09/2001	1251			83				cloudy40's
06/06/2001	1121			117			1	clear60's
07/05/2001	1116	10		190	8.42	588		clear60's
	1404			54			İ	ptcloudy80's
08/14/2001	1418			54			ł	clear80's
09/20/2001	1134	12		35	8.6	1017		clear80's
10/03/2001	1206			30			į	clear70's
1/09/2001	1154			52				clear40's
2/12/2001	1033		. fi	ozen-no flov	N			clear20's

### UN-NAMED DRAINAGE OFF STRAIGHT CANYON CREEK

T-19

	<	*****	Field Meas	urements		>	1	
Date	Time	Temp. (oC)	Flow GPM	pН	Cond. (uS)	Dis. Oxygen	Weather	
01/05/1999	1010		150					
02/01/1999	1327		Frozen				clear30's	
03/01/1999	955	-1	170 170	=			snow30's	
04/07/1999	1044	•	190	7.53	841	5.9	clear40's	
05/05/1999	1322		400				cloudy40's	
06/08/1999	954	6.7	375	_			ptcloudy50's	
07/16/1999	1431	0.7		8	784	7.6	ptcloudy60's	
08/03/1999	1344		170				cloudy70's	
09/02/1999	1159	14.3	170				cloudy60's	
10/04/1999	1240	14.5	120	8.07	852	5.6	ptcloudy60's	
11/01/1999	1235		75				clear70's	
12/06/1999	1203	-0.3	85	_			clear60's	
01/10/2000	1348	-0.5	75	7.76	976	10.7	clear30's	
02/02/2000	946		Frozen				cloudy40's	
03/06/2000	1205	-0.7	Frozen				ptcloudy40's	
04/05/2000	946	-0.7	100	7.69	941	7.3	snow30's	
05/05/2000	1316		200				clear40's	
06/12/2000	1247	14.1	170				ptcloudy70's	
07/06/2000	1025	14.1	66.7	8.32	986	8.9	cloudy80's	
08/09/2000	1207		50				clear80's	
09/12/2000	1446	17.1	28.58				ptcloudy90's	
10/10/2000	943	17.1	24	8.67	1104	7.2	clear80's	
11/06/2000	1112		87				cloudy50's	rain
12/04/2000	936	0.4	70				cloudy30's	
01/03/2001	940	-0.4	25	8.51	1232	10.4	clear30's	
02/05/2001	950		20				clear30's	
03/08/2001	1007		25			ĺ	clear30's	
04/05/2001	1124	1.7	96	8.65	1100	2.9	clear40's	
05/09/2001	1124		150				cloudy40's	
06/06/2001	1000		212				clear60's	
07/05/2001		7.7	150	8.49	887		clear60's	
08/14/2001	1116		83				ptcloudy80's	
09/20/2001	1240		54				clear80's	
0/03/2001	1005	8.9	50	8.8	1074		clear80's	
	1029		46				clear 70's	
1/07/2001	1031		69.8			į		Linhe
2/10/2001	1150	3	35	8.34	1230		cloudy40's	Light rain

### DEER CREEK FLOW & QUALITY

### ABOVE THE MINE - DCR01

	<	Field Measur	ements	>			1
			Flow			Cond.	
Date	Time	Temp. (°C)	ft.	GPM	рН	(uS)	Weather
01/10/1000					•	(10)	Weather
01/12/1999	1145			Frozen			clear30's
02/02/1999	1347			Frozen			cloudy30's
03/04/1999	859			Frozen			ptcloudy40's
04/13/1999	1440			Frozen			clear50's
05/10/1999	1509			556			ptcloudy50's
06/14/1999	1425	9.8		675	7.93	456	sunny80's
07/26/1999	1148			252		.50	cloudy80's
08/12/1999	1220			252			ptcloudy70's
09/13/1999	1429	6.9		134	7.83	503	clear 70's
10/05/1999	1508			101	7.05	303	clear 70's
11/17/1999	1447			Frozen			
12/09/1999	1243			Frozen			ptcloudy50's
01/17/2000	948			Frozen			cloudy20's
02/03/2000	1345			Frozen			ptcloudy40's
03/09/2000	1430			Frozen			clear40's
04/05/2000	1410			Frozen			ptcloudt30's
05/01/2000	1435			737			ptcloudy50's
06/20/2000	1037	6.3		210	8.25	400	clear60's
07/06/2000	1524			134	8.23	499	clear80's
08/07/2000	1534			45.8			clear80's
09/11/2000	1451	9		40	0.71		ptcloudy90's
10/12/2000	1426	•		80	8.71	535	clear80's
11/06/2000	1515						clear40's
12/05/2000	1116			Frozen			cloudy30's
01/05/2001	1256			Frozen Frozen			clear30's
02/05/2001	1424						clear40's
03/13/2001	1345			Frozen			ptcloudy40's
04/23/2001	1120			Frozen			clear40's
05/14/2001	1328			Frozen			clear40's
06/29/2001	1020	8.4		1462			clear60's
07/11/2001	1000	0.4		117	8.68	583	clear80's
08/07/2001	1522			274			clear80's
09/12/2001	1346	7.9		134		i	cloudy80's
10/17/2001	1207	1.9		101	7.67	599	ptcloudy70's
11/08/2001	1102			71.5			cloudy50's
12/10/2001	1455			95			clear40's
	1400			Frozen			cloudy20's

### DEER CREEK FLOW & QUALITY

### @ PERMIT BOUNDARY - DCR04

	<	Field Measur	ements	>			1
			Flow			Cond.	
Date	Time	Temp. (°C)	ft.	GPM	рН	(uS)	Weather
01/12/1999	1153						
02/02/1999	1356			817			clear30's
03/04/1999	905	0.5		1934			cloudy30's
04/13/1999	1446	8.5		994	8.15	852	ptcloudy40's
05/10/1999	1518			994			clear50's
06/14/1999	1458	11.1		2420			ptcloudy50's
07/26/1999	1155	11.1		1596	7.77	645	sunny80's
08/12/1999	1229			1934			cloudy80's
09/13/1999	1445	11.0		1183			ptcloudy70's
10/05/1999	1516	11.2		1183	8.17	691	clear70's
11/17/1999	1455			817			clear70's
12/09/1999	1305			2112			ptcloudy50's
01/17/2000	1000	6.4		1282	8.07	793	cloudy20's
02/03/2000				1384			ptcloudy40's
03/09/2000	1355 1438			1087			clear40's
04/05/2000		7.9		1762	8.34	1135	ptcloudy30's
05/01/2000	1416			1183			ptcloudy50's
05/01/2000	1443			2295			clear60's
07/06/2000	1057	11.4		1596	8.35	733	clear80's
	1532			1384			clear80's
08/07/2000	1541			1282			ptcloudy80's
09/11/2000	1510	12		1183	8.6	736	clear80's
10/12/2000	1444			1183			clear40's
11/06/2000	1525			1384			cloudy30's
12/05/2000	1132	5.6		2172	8.19	938	clear30's
01/05/2001	1305			2357			clear40's
02/05/2001	1432			1282			ptcloudy40's
03/13/2001	1353	9.1		1087	8.64	1218	clear40's
04/23/2001	1128			1333			clear40's
05/14/2001	1335			1934			clear60's
06/29/2001	1036	10.1		817	8.57	669	clear80's
07/11/2001	1025			734		00)	clear80's
08/07/2001	1531			1706			cloudy80's
09/12/2001	1405	11.5		1384	8.52	754	ptcloudy70's
10/17/2001	1214			1282		104	cloudy60's
11/08/2001	1110			1183			clear40's
12/10/2001	1507	9.4		1384	8.42	956	cloudy20's
					0.,2	/50	cioudy20 S

### DEER CREEK FLOW & QUALITY

### BELOW THE MINE - DCR06

	<	Field Measure	ements>			1
_			Flow		Cond.	
Date	Time	Temp. (oC)	ft. GPM	рН	(uS)	Weather
01/12/1999	1000					
	1200		800			clear30's
02/02/1999	1404		1923			cloudy30's
03/04/1999	930	5.1	996	8.17	913	ptcloudy40's
04/13/1999	1453		995			clear50's
05/10/1999	1525		2425			ptcloudy50's
06/14/1999	1515	14.6	1600	8.24	727	sunny80's
07/26/1999	1203		1940			cloudy80's
08/12/1999	1235		1190			ptcloudy70's
09/13/1999	1500	14.8	1190	8.47	710	clear70's
10/05/1999	1524		820			clear70's
11/1 <b>7</b> /1999	1504		2115			ptcloudy50's
12/09/1999	1329	3.8	1290	7.87	857	cloudy20's
01/17/2000	1010		1390	,,,,,	057	ptcloudy40's
02/03/2000	1403		1090			clear40's
03/09/2000	1459	7.7	1766	8.46	1090	ptcloudy30's
04/05/2000	1423		1190	0.40	1090	1 '
05/01/2000	1450		2300			ptcloudy50's
06/20/2000	1112	12.6	1600	8.37	810	clear60's
07/06/2000	1543		1390	0.57	010	clear80's
08/07/2000	1556		1290			clear80's
09/11/2000	1527	16	1191	8.7	750	ptcloudy80's
10/12/2000	1449		1187	0.7	758	clear80's
11/06/2000	1530		1382			clear40's
12/05/2000	1149	3.5	2180	7.9	0.40	cloudy30's
01/05/2001	1314		2346	7.9	863	clear30's
02/05/2001	1437		1276			clear40's
03/13/2001	1410	9.8		0.55		ptcloudy40's
04/23/2001	1140	7.0	1080	8.75	1299	clear40's
05/14/2001	1341		1329			clear40's
06/29/2001	1056	13.9	1910			clear60's
07/11/2001	1035	15.7	812	8.69	825	clear80's
08/07/2001	1538		730			clear80's
09/12/2001	1415	15	1702			cloudy80's
10/17/2001	1225	13	1380	8.58	756	ptcloudy70's
11/08/2001	1116		1280			cloudy60's
12/10/2001	1526		1176			clear40's
2001	1320		1380			cloudy20's
					1	

### **GRIMES WASH FLOW & QUALITY**

### RIGHT FORK - GWR01

Date   Time   Temp. (*C)   ft.   GPM   pH   (uS)   Weather		<	Field Measurement	s>			ĺ
Date   Time   Temp. (*C)   ft.   GPM   pH   (uS)   Weather			F			Cond.	
01/05/1999 1116	Date	Time	Temp. (°C) ft	. GPM	На		Weather
O2/01/1999   1510   no flow   clear30's   clear30's   clear30's   clear30's   clear30's   clear30's   clear30's   clear30's   cloudy50's   cloudy50's   cloudy50's   cloudy50's   cloudy50's   cloudy50's   cloudy50's   cloudy60's   clear60's   cloudy60's   clear60's   cloudy40's   clear60's   cloudy40's   clear60's   cloudy40's   clear60's   cloudy40's   clear60's   cloudy40's   clear60's   cloudy40's   clear60's	01/05/1000	1116				()	1 Weather
1510			no f	low			clear30's
1035   1035   1036   1036   1037   1037   1038   1039   10407/1999   1250   1250   1250   1050/05/1999   1421   1050/06/08/1999   1209   1050/06/08/1999   1420   1050/06/08/1999   1420   1050/06/06/06/06/06/06/06/06/06/06/06/06/06			no f	ow			1
1.250   1.25			no fl	ow			
Decidity 50's   Decidity 50'			no fl	ow			1
07/23/1999         1115         no flow         ptcloudy60's sunny70's sunny70's cloudy60's sunny70's cloudy60's cloudy40's cloudy30's cloudy30's cloudy30's cloudy30's cloudy80's c			no fl	ow			1 .
08/03/1999 1420 no flow cloudy60's cloudy50's cloudy60's cloudy50's cloudy60's cloudy60's cloudy60's cloudy60's cloudy50's		no fl	ow				
1420   no flow   cloudy60's   cloudy40's   cloudy40's   cloudy40's   cloudy40's   cloudy40's   cloudy40's   cloudy40's   cloudy30's   cloudy30's   cloudy30's   cloudy30's   cloudy30's   cloudy30's   cloudy30's   cloudy30's   cloudy50's			no fl	ow			
10/04/1999   1430   no flow   cloudy60's			no fl	ow			
11/01/1999   1339   no flow   clear70's     12/06/1999   1430   no flow   clear30's     12/06/1999   1430   no flow   clear30's     12/06/1999   1430   no flow   clear30's     12/06/1999   1430   no flow   cloudy40's     02/02/2000   1427   no flow   cloudy40's     03/06/2000   1355   no flow   cloudy30's     04/07/2000   1200   no flow   clear50's     06/12/2000   1422   no flow   clear70's     06/12/2000   1422   no flow   clear70's     07/06/2000   1205   no flow   clear80's     08/09/2000   1400   no flow   clear80's     09/13/2000   1045   no flow   clear80's     10/10/2000   1128   no flow   clear80's     11/06/2000   1127   no flow   clear80's     11/06/2000   1127   no flow   clear30's     12/04/2001   1412   no flow   clear30's     02/05/2001   1217   no flow   clear40's     03/08/2001   1400   no flow   clear30's     04/06/2001   1050   no flow   clear40's     05/11/2001   1240   no flow   clear60's     05/11/2001   1240   no flow   clear60's     07/10/2001   1329   no flow   clear60's     08/14/2001   1130   no flow   clear60's     08/14/2001   1130   no flow   clear60's     08/14/2001   1105   no flow   clear60's     08/14/2001   1120   no flow   clear60's     11/09/2001   1205   no flow   clear60's     11/09/2001   1205   no flow   clear60's     11/09/2001   1049   no flow   clear20's     10/16/2002   1220   no flow   clear20's     12/12/2002   1220			no fl	ow			
12/06/1999   1430   no flow   clear60's   clear30's   clear30's   cloudy40's   ptcloudy40's   ptcloudy30's   ptcloudy80's   ptcloudy80's   ptcloudy80's   ptcloudy80's   ptcloudy80's   ptcloudy80's   ptcloudy90's   ptcloudy90's   ptcloudy90's   ptcloudy90's   ptcloudy90's   ptcloudy90's   ptcloudy90's   ptcloudy30's			no fl	ow			_
1200/1990   1430   1110   100   100   100   1427   100   100   1427   100			no fl	ow			
O2/02/2000         1427         no flow         cloudy40's           03/06/2000         1355         no flow         ptcloudy40's           04/07/2000         1200         no flow         cloudy30's           05/26/2000         11115         no flow         clear50's           06/12/2000         1422         no flow         clear70's           07/06/2000         1205         no flow         clear80's           08/09/2000         1400         no flow         ptcloudy90's           09/13/2000         1045         no flow         ptcloudy90's           10/10/2000         1128         no flow         clear80's           11/06/2000         1127         no flow         cloudy50's           12/04/2000         1412         no flow         clear30's           01/03/2001         1126         no flow         clear30's           02/05/2001         1217         no flow         clear40's           03/08/2001         1400         no flow         clear40's           05/11/2001         951         no flow         ptcloudy40's           06/06/2001         1142         no flow         clear60's           08/14/2001         1142         no flow         <			no fl	ow			
03/06/2000         1427         no flow         ptcloudy40's           03/06/2000         1355         no flow         cloudy30's           05/26/2000         1115         no flow         clear50's           06/12/2000         1422         no flow         clear70's           07/06/2000         1205         no flow         cloudy80's           08/09/2000         1400         no flow         clear80's           09/13/2000         1045         no flow         ptcloudy90's           10/10/2000         1128         no flow         clear80's           11/06/2000         1127         no flow         cloudy50's           12/04/2000         1412         no flow         clear30's           01/03/2001         1126         no flow         clear40's           02/05/2001         1217         no flow         clear40's           03/08/2001         1400         no flow         clear30's           04/06/2001         1050         no flow         clear40's           05/11/2001         951         no flow         clear60's           06/06/2001         1142         no flow         clear60's           08/14/2001         1142         no flow         clea			no fle	ow			
04/07/2000         1200         no flow         cloudy30's           05/26/2000         1115         no flow         clear50's           06/12/2000         1422         no flow         clear70's           07/06/2000         1205         no flow         cloudy80's           08/09/2000         1400         no flow         clear80's           09/13/2000         1045         no flow         clear80's           10/10/2000         1128         no flow         cloudy90's           11/06/2000         1127         no flow         cloudy50's           12/04/2000         1412         no flow         clear30's           01/03/2001         1126         no flow         clear40's           02/05/2001         1217         no flow         clear40's           03/08/2001         1400         no flow         clear40's           05/11/2001         951         no flow         clear40's           05/11/2001         951         no flow         clear60's           06/06/2001         1142         no flow         clear60's           08/14/2001         1142         no flow         clear60's           08/14/2001         1329         no flow         clear80's<		1427	no fle	ow			,
05/26/2000         1115         no flow         clear50's           06/12/2000         1422         no flow         clear70's           07/06/2000         1205         no flow         cloudy80's           08/09/2000         1400         no flow         clear80's           09/13/2000         1045         no flow         ptcloudy90's           10/10/2000         1128         no flow         clear80's           11/06/2000         1127         no flow         cloudy50's           12/04/2000         1412         no flow         clear30's           01/03/2001         1126         no flow         clear30's           02/05/2001         1217         no flow         clear40's           03/08/2001         1400         no flow         clear40's           04/06/2001         150         no flow         clear40's           05/11/2001         951         no flow         clear60's           06/06/2001         1142         no flow         clear60's           07/10/2001         1240         no flow         clear60's           08/14/2001         1142         no flow         clear70's           10/16/2001         1130         no flow         clear80's		1355	no fle	ow			•
06/12/2000 1422 no flow clear 70's cloudy 80's cloudy 80's 08/09/2000 1400 no flow ptcloudy 90's 10/10/2000 1128 no flow clear 80's 11/06/2000 1128 no flow clear 80's 11/06/2000 1127 no flow clear 80's 11/06/2000 1412 no flow clear 30's 12/04/2000 1412 no flow clear 30's 01/03/2001 1126 no flow clear 30's 01/03/2001 1126 no flow clear 30's 02/05/2001 1217 no flow clear 30's 02/05/2001 1217 no flow clear 30's 04/06/2001 1050 no flow clear 40's 05/11/2001 951 no flow clear 40's 05/11/2001 951 no flow clear 60's 07/10/2001 1240 no flow clear 60's 08/14/2001 1142 no flow clear 60's 08/14/2001 1142 no flow clear 60's 08/14/2001 1130 no flow clear 60's 09/20/2001 1329 no flow clear 60's 11/09/2001 1205 no flow cl		1200	no flo	ow			
06/12/2000         1422         no flow         clear/0's           07/06/2000         1205         no flow         clear80's           08/09/2000         1400         no flow         clear80's           09/13/2000         1045         no flow         ptcloudy90's           10/10/2000         1128         no flow         clear80's           11/06/2000         1127         no flow         cloudy50's           12/04/2000         1412         no flow         clear30's           01/03/2001         1126         no flow         clear30's           02/05/2001         1217         no flow         clear40's           03/08/2001         1400         no flow         clear30's           04/06/2001         1050         no flow         clear40's           05/11/2001         951         no flow         clear60's           06/06/2001         1142         no flow         clear60's           08/14/2001         1142         no flow         clear60's           08/14/2001         1142         no flow         clear70's           10/16/2001         130         no flow         clear80's           11/09/2001         1205         no flow         clear60's<		1115	no flo	)W			
08/09/2000         1400         no flow         clear80's           09/13/2000         1045         no flow         ptcloudy90's           10/10/2000         1128         no flow         clear80's           11/06/2000         1127         no flow         cloudy50's           12/04/2000         1412         no flow         clear30's           01/03/2001         1126         no flow         clear40's           02/05/2001         1217         no flow         clear40's           03/08/2001         1400         no flow         clear30's           04/06/2001         1050         no flow         clear40's           05/11/2001         951         no flow         ptcloudy40's           06/06/2001         1142         no flow         clear60's           07/10/2001         1240         no flow         clear60's           08/14/2001         1142         no flow         clear70's           09/20/2001         1329         no flow         clear80's           11/09/2001         1205         no flow         clear60's           11/09/2001         1205         no flow         clear60's           12/12/2001         1049         no flow         clear2		1422					- · · · ·
09/13/2000         1400         no flow         ptcloudy90's           10/10/2000         1128         no flow         clear80's           11/06/2000         1127         no flow         cloudy50's           12/04/2000         1412         no flow         cloudy30's           01/03/2001         1126         no flow         clear30's           02/05/2001         1217         no flow         clear40's           03/08/2001         1400         no flow         clear30's           04/06/2001         1050         no flow         clear40's           05/11/2001         951         no flow         clear60's           06/06/2001         1142         no flow         clear60's           07/10/2001         1240         no flow         clear60's           08/14/2001         1142         no flow         clear70's           09/20/2001         1329         no flow         clear80's           11/09/2001         1205         no flow         clear60's           11/09/2001         1205         no flow         clear60's           12/12/2001         1049         no flow         clear60's           11/14/2002         1104         no flow         clear20'		1205	no flo	)W			•
09/13/2000         1045         no flow         ptcloudy90's           10/10/2000         1128         no flow         clear80's           11/06/2000         1127         no flow         cloudy50's           12/04/2000         1412         no flow         cloudy30's           01/03/2001         1126         no flow         clear30's           02/05/2001         1217         no flow         clear40's           03/08/2001         1400         no flow         clear30's           04/06/2001         1050         no flow         clear40's           05/11/2001         951         no flow         ptcloudy40's           06/06/2001         1142         no flow         clear60's           08/14/2001         1142         no flow         clear60's           08/14/2001         1142         no flow         clear70's           10/16/2001         1329         no flow         clear80's           11/09/2001         1205         no flow         clear60's           11/109/2001         1205         no flow         clear60's           11/14/2002         1104         no flow         clear20's           01/14/2002         120         no flow         clear	08/09/2000	1400	no flo	ıw		I	
10/10/2000       1128       no flow       clear80's         11/06/2000       1127       no flow       cloudy50's         12/04/2000       1412       no flow       cloudy30's         01/03/2001       1126       no flow       clear30's         02/05/2001       1217       no flow       clear40's         03/08/2001       1400       no flow       clear30's         04/06/2001       1050       no flow       clear40's         05/11/2001       951       no flow       ptcloudy40's         06/06/2001       1142       no flow       clear60's         07/10/2001       1240       no flow       clear60's         08/14/2001       1142       no flow       clear60's         09/20/2001       1329       no flow       clear70's         10/16/2001       1130       no flow       clear80's         11/09/2001       1205       no flow       clear60's         11/14/2002       1049       no flow       clear40's         01/14/2002       1104       no flow       clear20's         02/05/2002       1220       no flow       clear20's	09/13/2000	1045		• •			
11/06/2000       1127       no flow       cloudy30's         12/04/2000       1412       no flow       cloudy30's         01/03/2001       1126       no flow       clear30's         02/05/2001       1217       no flow       clear40's         03/08/2001       1400       no flow       clear30's         04/06/2001       1050       no flow       ptcloudy40's         05/11/2001       951       no flow       clear60's         06/06/2001       1142       no flow       clear60's         07/10/2001       1240       no flow       clear60's         08/14/2001       1142       no flow       clear70's         09/20/2001       1329       no flow       clear70's         10/16/2001       1130       no flow       clear80's         11/09/2001       1205       no flow       clear60's         12/12/2001       1049       no flow       clear40's         01/14/2002       1104       no flow       clear20's         02/05/2002       1220       no flow       clear20's	10/10/2000	1128				i	
12/04/2000       1412       no flow       cloudy30's         01/03/2001       1126       no flow       clear30's         02/05/2001       1217       no flow       clear40's         03/08/2001       1400       no flow       clear30's         04/06/2001       1050       no flow       ptcloudy40's         05/11/2001       951       no flow       clear60's         06/06/2001       1142       no flow       clear60's         07/10/2001       1240       no flow       clear60's         08/14/2001       1142       no flow       clear60's         09/20/2001       1329       no flow       clear70's         10/16/2001       1130       no flow       clear80's         11/09/2001       1205       no flow       clear60's         12/12/2001       1049       no flow       clear40's         01/14/2002       1104       no flow       clear20's         02/05/2002       1220       no flow       clear20's	11/06/2000	1127		**		j	
01/03/2001       1126       no flow       clear30's         02/05/2001       1217       no flow       clear40's         03/08/2001       1400       no flow       clear30's         04/06/2001       1050       no flow       clear40's         05/11/2001       951       no flow       ptcloudy40's         06/06/2001       1142       no flow       clear60's         07/10/2001       1240       no flow       clear60's         08/14/2001       1142       no flow       clear60's         09/20/2001       1329       no flow       clear70's         10/16/2001       1130       no flow       clear80's         11/09/2001       1205       no flow       clear60's         12/12/2001       1049       no flow       clear40's         01/14/2002       1104       no flow       clear20's         02/05/2002       1220       no flow       clear20's	12/04/2000	1412					•
02/05/2001       1217       no flow       clear40's         03/08/2001       1400       no flow       clear30's         04/06/2001       1050       no flow       clear40's         05/11/2001       951       no flow       ptcloudy40's         06/06/2001       1142       no flow       clear60's         07/10/2001       1240       no flow       clear60's         08/14/2001       1142       no flow       clear60's         09/20/2001       1329       no flow       clear70's         10/16/2001       1130       no flow       clear80's         11/09/2001       1205       no flow       clear60's         12/12/2001       1049       no flow       clear40's         01/14/2002       1104       no flow       clear20's         02/05/2002       1220       no flow       clear20's	01/03/2001	1126				İ	· · · · · -
03/08/2001 1400 no flow 04/06/2001 1050 no flow 05/11/2001 951 no flow 06/06/2001 1142 no flow 07/10/2001 1240 no flow 08/14/2001 1142 no flow 09/20/2001 1329 no flow 10/16/2001 1130 no flow 11/09/2001 1205 no flow 11/09/2001 1049 no flow 01/14/2002 1104 no flow 01/14/2002 1200 no flow 02/05/2002 1220 no flow 02/05/2002 1220 no flow 02/05/2002 1220 no flow 03/08/2001 po flow clear30's clear40's clear60's clear60's clear60's clear60's clear60's clear60's clear20's clear20's	02/05/2001	1217		**			· -
04/06/2001       1050       no flow       clear40's         05/11/2001       951       no flow       ptcloudy40's         06/06/2001       1142       no flow       clear60's         07/10/2001       1240       no flow       clear60's         08/14/2001       1142       no flow       cloudy70's         09/20/2001       1329       no flow       clear70's         10/16/2001       1130       no flow       clear80's         11/09/2001       1205       no flow       clear60's         12/12/2001       1049       no flow       clear40's         01/14/2002       1104       no flow       clear20's         02/05/2002       1220       no flow       clear20's	03/08/2001	1400		**			
05/11/2001       951       no flow       ptcloudy40's         06/06/2001       1142       no flow       clear60's         07/10/2001       1240       no flow       clear60's         08/14/2001       1142       no flow       cloudy70's         09/20/2001       1329       no flow       clear70's         10/16/2001       1130       no flow       clear80's         11/09/2001       1205       no flow       clear60's         12/12/2001       1049       no flow       clear40's         01/14/2002       1104       no flow       clear20's         02/05/2002       1220       no flow       clear20's	04/06/2001	1050		••			clear40's
06/06/2001       1142       no flow       clear60's         07/10/2001       1240       no flow       clear60's         08/14/2001       1142       no flow       cloudy70's         09/20/2001       1329       no flow       clear70's         10/16/2001       1130       no flow       clear80's         11/09/2001       1205       no flow       clear60's         12/12/2001       1049       no flow       clear40's         01/14/2002       1104       no flow       clear20's         02/05/2002       1220       no flow       clear20's	05/11/2001	951		**		1	ptcloudy40's
07/10/2001         1240         no flow         clear60's           08/14/2001         1142         no flow         cloudy70's           09/20/2001         1329         no flow         clear70's           10/16/2001         1130         no flow         clear80's           11/09/2001         1205         no flow         clear60's           12/12/2001         1049         no flow         clear40's           01/14/2002         1104         no flow         clear20's           02/05/2002         1220         no flow         clear20's	06/06/2001	1142		• •			clear60's
08/14/2001     1142     no flow     clear70's       09/20/2001     1329     no flow     clear70's       10/16/2001     1130     no flow     clear80's       11/09/2001     1205     no flow     clear60's       12/12/2001     1049     no flow     clear40's       01/14/2002     1104     no flow     clear20's       02/05/2002     1220     no flow     clear20's	07/10/2001	1240		•		1	clear60's
09/20/2001     1329     no flow     clear70's       10/16/2001     1130     no flow     clear80's       11/09/2001     1205     no flow     clear60's       12/12/2001     1049     no flow     clear40's       01/14/2002     1104     no flow     clear20's       02/05/2002     1220     no flow     clear20's	08/14/2001	1142		•			cloudy70's
10/16/2001     1130     no flow     clear80's       11/09/2001     1205     no flow     clear60's       12/12/2001     1049     no flow     clear40's       01/14/2002     1104     no flow     clear20's       02/05/2002     1220     no flow     clear20's	09/20/2001					•	clear70's
11/09/2001     1205     no flow     clear60's       12/12/2001     1049     no flow     clear40's       01/14/2002     1104     no flow     clear20's       02/05/2002     1220     no flow     clear20's	10/16/2001			••			clear80's
12/12/2001     1049     no flow     clear40's       01/14/2002     1104     no flow     clear20's       02/05/2002     1220     no flow     clear20's	11/09/2001						clear60's
01/14/2002 1104 no flow clear20's 02/05/2002 1220 no flow clear20's							clear40's
02/05/2002 1220 no flow clear 20's							clear20's
no tion	· · · <del>-</del>						clear20's
	<b></b>	-~~	no flor	v			clear30's

### **GRIMES WASH FLOW & QUALITY**

### LEFT FORK - GWR02

	<	Field Measure	ments	>			1
			Flow			Cond.	ĺ
Date	Time	Temp. (°C)	ft.	GPM	pН	(uS)	Weather
13/10/1000					· · · · · · · · · · · · · · · · · · ·		
12/10/1998 01/05/1999	1125			Frozen			clear30's
02/01/1999	1122			15.2			clear30's
	1514			Frozen			clear30's
03/03/1999	1041			Frozen			cloudy50's
04/07/1999	1257			Dry			cloudy40's
05/05/1999 06/08/1999	1426			Dry			ptcloudy50's
	1221	9.6		54.5	7.95	745	ptcloudy60's
07/23/1999	1123			40			sunny70's
08/03/1999	1430			40			cloudy60's
09/02/1999	1407	12.5		59	8.53	545	cloudy60's
10/04/1999	1442			45			clear70's
11/01/1999	1342			20			clear60's
12/06/1999	1440			Frozen			clear30's
01/11/2000	1119			Frozen			cloudy40's
02/02/2000	1433			Frozen			ptcloudy40's
03/06/2000	1400			Frozen			cloudy30's
04/07/2000	1212			Dry			clear50's
05/26/2000	1127			Damp			clear70's
06/12/2000	1426			Damp			cloudy80's
07/06/2000	1210			10			clear80's
08/09/2000	1403			8			
09/13/2000	1105	24.9		0.8	8.61	622	ptcloudy90's clear80's
10/10/2000	1135			10	0.01	022	
11/06/2000	1135			Frozen			cloudy50's
12/04/2000	1421			Frozen			cloudy30's
01/03/2001	1130			Frozen			clear30's
02/05/2001	1221			Frozen			clear40's
03/08/2001	1407			Dry			clear30's
04/06/2001	1101			<i>D</i> 1y			clear40's
05/11/2001	1010			50			ptcloudy40's
06/06/2001	1153	10.5		192	9 47	700	clear60's
07/10/2001	1246			110	8.47	789	clear60's
08/14/2001	1159			67			cloudy70's
09/20/2001	1344	19.5		24	0.02	-0.5	clear80's
10/16/2001	1138	•			8.82	708	clear80's
11/09/2001	1209			21			clear60's
12/12/2001	1049			8			clear40's
				Frozen		[	clear20's

### **GRIMES WASH FLOW & QUALITY**

### BELOW THE MINE - GWR03 \*\* FLOW INCLUDES MINE DISCHARGE

	<	Field Measure	ments	>	Discil	MOL	1
			Flow			Cond.	
Date	Time	Temp. (°C)	ft.	GPM	pН	(uS)	Weather Comments
01/05/1000	1100					<del></del>	
01/05/1999	1156			49.2			clear30's
02/01/1999	1519			35			clear30's
03/03/1999	1053	3.4		80	7.84	1537	cloudy50's
04/07/1999 05/05/1999	1305			53			cloudy40's
05/03/1999	1433			74			ptcloudy50's
	1245	9.9		80	8.21	1298	ptcloudy60's
07/23/1999	1129			349			sunny70's
08/03/1999	1436			367			cloudy60's
09/02/1999	1426	11.4		112	8.32	1133	cloudy60's
10/04/1999	1451			320			clear70's
11/01/1999	1402			349			clear60's
12/06/1999	1443	0.8		30	7.72	1511	clear30's
01/11/2000	1123			45			cloudy40's
02/02/2000	1443			42.8			ptcloudy40's
03/06/2000	1410	1.4		40	8.01	9.2	cloudy30's
04/07/2000	1215			60			clear50's
05/26/2000	1132			305			clear70's
06/12/2000	1433	16.2		21	8.17	1061	cloud80's
07/06/2000	1220			309			clear80's
08/09/2000	1409			310			ptcloudy90's
09/13/2000	1126	12.6		20.4	8.51	1064	clear80's
10/10/2000	1140			327			cloudy50's rain
11/06/2000	1145			70			cloudy30's
12/04/2000	1440	2.2		100	7.7	2350	clear30's
01/03/2001	1141			25		-000	clear40's
02/05/2001	1227			30			clear30's
03/08/2001	1440	7.7		87	8.57	2900	clear40's
04/06/2001	1112			271		2,00	ptcloudy40's
05/11/2001	1018			510			clear60's
06/06/2001	1206	10.9		195	8.32	987	clear60's
07/10/2001	1254			115	0.52	707	
08/14/2001	1204			100			cloudy70's
09/26/2001	1314	15.3		30	8.64	1450	clear80's
10/16/2001	1158		•	25	0.07	1430	clear80's
11/09/2001	1218			9.8			clear60's
12/12/2001	1110	4		6	7.53	1000	clear40's
				v	1.55	1990	clear20's

### HUNTINGTON CREEK FLOW & QUALITY

### **HUNTINGTON CREEK - HCC01**

	<		Field Measi	urements		>	l	
Date	Time	Temp. (oC)	Flow CFS	рН	Cond. (uS)	Dis. Oxygen	Weather	Comments
12/02/1998 03/03/1999 06/17/1999 09/14/1999 12/09/1999 03/09/2000 06/26/2000 09/25/2000 12/05/2000 03/13/2001 06/26/2001 09/12/2001 12/12/2001	1037 1419 1425 840 1335 1509 1405 1237 1158 1422 1452 1430 1454	0.2 3.5 11.3 6.3 -1.2 2.7 10.7 7.2 0 5.3 11 9.6 1.3	34 26 427 116 20 29 125 121 14 21 99 105 19	7.32 7.77 7.83 7.97 8.34 8.16 8.3 8.77 7.95 8.78 8.35 8.32 7.41	428 419 266 280 452 445 279 275 463 486 369 343 463	8.4 6.4 6.2 6.3 9.4 9.7 9.1 9.6 11.9 12.2 *	clear40;s cloudy50's ptcloudy70's cloudy60's cloudy20's ptcloudy30's cloudy70's clear80's clear30's clear40's cloudy70's, rain ptcloudy70's clear20's	*DO Probe Not Functioning

### HUNTINGTON CREEK FLOW & QUALITY

### **HUNTINGTON CREEK - HCC02**

	<		Field Meası	urements		>		
Date	Time	Temp. (oC)	Flow CFS	рН	Cond. (uS)	Dis. Oxygen	Weather	Comments
12/02/1998 03/03/1999 06/17/1999 09/14/1999 12/09/1999 03/09/2000 06/26/2000 09/25/2000 12/05/2000 03/13/2001 06/26/2001	1051 1432 1442 850 1348 1520 1415 1248 1209 1432 1505	0.8 3.9 11.1 6 -0.1 3 10.7 7 0.9 5.6 11.2	34 26 427 116 20 29 125 121 14	7.69 7.85 8.02 8.01 7.99 8.28 8.41 8.79 7.87 8.69	438 453 268 287 534 523 293 281 570 547	7.9 6.4 7.2 6.2 10.9 9.5 7.4 9.7 11.9 12.1	clear40;s cloudy50's ptcloudy70's cloudy60's cloudy20's ptcloudy30's cloudy70's clear80's clear30's clear40's	Comments
09/12/2001 12/12/2001	1443 1504	9.5 0.9	99 105 19	8 8.5 7.69	381 351 541	* 11 14.2	cloudy70's, rain ptcloudy70's clear20's	*DO Probe Not Functionin

### HUNTINGTON CREEK FLOW & QUALITY

### **HUNTINGTON CREEK - HCC04**

Date	Time	Temp. (oC)	Field Measi Flow CFS	pH	Cond. (uS)	Dis. Oxygen	Weather	Comments
12/02/1998 03/03/1999 06/17/1999 09/14/1999 12/09/1999 03/10/2000 06/26/2000 12/05/2000 03/13/2001 06/26/2001 09/17/2001 12/13/2001	1105 1451 1455 900 1401 1100 1430 1303 1225 1446 1522 1213 1052	1.3 4.6 11.1 6.1 -1.3 2.3 11 7 1.2 6.5 11.4 7.7	34 26 427 116 20 29 125 121 14 21 99 105 19	8.01 8.21 8.16 8.13 8.48 7.81 8.49 8.73 8.17 8.72 8.61 8.56	515 506 272 294 624 537 312 294 638 600 401 372 641	7.9 6 6.1 6 9.6 10 7.2 9.7 10.5 11.8 *	clear40;s cloudy50's ptcloudy70's cloudy60's cloudy20's ptcloudy30's cloudy70's clear80's clear30's clear40's cloudy70's, rain cloudy70's clear20's	*DO Probe Not Functioni *DO Probe Not Functioni

### MEETINGHOUSE CANYON MHC01

	<	Field Measurer	ments		>	1
Date	Tr.	_	Flow		Cond.	
Date	Time	Temp. (oC)	ft. GPM	рН	(uS)	Weather Comments
01/12/1999	1137		_			
02/02/1999	1339		Frozen			clear30's
03/03/1999	1403		Frozen			cloudy30's
04/12/1999	1453		Frozen			cloudy50's
05/10/1999	1402		Dry			ptcloudy50's
06/17/1999	1400	11.8	339			ptcloudy50's
07/26/1999	1213	11.0	1336	7.63	349	ptcloudy70's
08/12/1999	1203		365			cloudy80's
09/13/1999	1348	12.3	365			ptcloudy70's
10/05/1999	1446	12.5	145	7.74	372	clear70's
11/17/1999	1436		117			clear70's
12/08/1999	1352		Frozen			ptcloudy50's
01/17/2000	1031		Frozen			clear30's
02/03/2000	1334		Frozen			ptcloudy40's
03/09/2000	1423		Frozen			clear40's
04/05/2000	1340		Frozen			ptcloudy30's
05/03/2000	1150		Frozen			ptcloudy50's
06/26/2000	1125	13.4	463			clear60's
07/06/2000	1503	15.4	350	8.24	350	cloudy70's
08/09/2000	901		117			clear80's
09/11/2000	1410	15	41			ptcloudy90's
10/10/2000	1531	13	35	8.76	368	clear80's
11/28/2000	1320		117			cloudy50's rain and snow.
12/05/2000	1100		Frozen			cloudy40's
01/05/2001	1244		Frozen			clear30's
02/05/2001	1415		Frozen			clear40's
03/13/2001	1336		INCCESSIBLE SN			ptcloudy40's
04/23/2001	1152		INCCESSIBLE SN	IOW		clear40's
05/14/2001	1310		Dry			clear40's
06/26/2001	1428	10.1	3700 est.			clear60's over capacity
07/03/2001	1012	10.1	647	8.59	448	cloudy70's rain
08/07/2001	1500		448			clear80's
09/12/2001	1144	0.0	175			cloudy80's
10/17/2001		9.9	68	7.33	435	ptcloudy70's
11/08/2001	1149 1037		47		1	cloudy60's
12/12/2001			41			clear40's
12/12/2001	1435		Frozen			clear20's

### MILL FORK CANYON FLOW & QUALITY

### MILL FORK CANYON ABOVE MINE (MFA1)

<		Field	Field Measurements Flow			Cond.	>		
Date	Time	Temp. (oC)	ft.	GPM	pН	(uS)	Dis. Oxygen	Weather	Comment
01/12/1999	1057			D					
02/02/1999	1151			Dry				clear30's	
03/03/1999	1129			Dry				cloudy30's	
04/12/1999	1339			Dry				cloudy50's	
05/10/1999	1016			Dry				ptcloudy50'	S
06/11/1999	958	3		Dry	7.00			cloudy40's	
07/26/1999	829	J		1500 150	7.80	383	6.2	clear70's	
08/12/1999	947							cloudy80's	
09/13/1999	1200			100				ptcloudy70'	S
10/05/1999	954			Dry				clear70s	
11/17/1999	1416			Dry				clear70's	
12/08/1999	1300			Dry				clear70's	
01/12/2000	1323			Dry	00101 0 01			clear30's	
02/03/2000	1000				SSIBLE SN			clear40's	
03/09/2000	1338				SSIBLE SN			clear40's	
04/05/2000	1301				SSIBLE SN			ptcloudy30's	3
05/03/2000	1033				SSIBLE SN	10M		ptcloudy50's	3
06/22/2000	1354			Dry				clear60's	
07/06/2000	1424			Dry			1	cloudy80's	
08/07/2000	1300			Dry				clear80's	
09/11/2000	1335			Dry				ptcloudy80's	;
10/10/2000	1320			Dry				clear80's	
11/06/2000	1450			Dry			l	cloudy50's	
12/05/2000	855			Dry			ŀ	cloudy30's	
01/05/2001	1053			Dry			1	clear30's	
02/05/2001	1350			Dry			J	clear40's	
03/13/2001	1300				SSIBLE SN	ow		ptcloudy40's	
04/20/2001	1018			Dry				clear40's	
05/09/2001	1431			Dry				ptcloudy40's	
06/26/2001	1321			Dry				clear60's	
07/03/2001	831			Dry				cloudy70's	rain
08/07/2001	1255			Dry			1	clear80's	
09/12/2001	900			Dry				cloudy80's	
0/17/2001	900			Dry			İ	ptcloudy70's	
1/08/2001				Dry				cloudy50's	
2/12/2001	855 1425			Dry				clear40's	
21 1212001	1425			Dry			,	clear20's	

### MILL FORK CANYON FLOW & QUALITY

### MILL FORK CANYON BELOW MINE (MFB2)

<-		Field Measurements				>	l		
Date	Time	Tr. (6)	Flow			Cond.	Dis.		
Date	1 ime	Temp. (oC)	ft.	GPM	pН	(uS)	Oxygen	Weather	Comments
01/12/1999	1104								
02/02/1999	1157			Frozen				clear30's	
03/03/1999				Frozen				cloudy30's	
	1137			Frozen				cloudy50's	
04/12/1999	1353			Frozen				ptcloudy50's	
05/10/1999	1045			27				cloudy40's	
06/11/1999	1023	4		1600	7.92	413	7.1	clear70's	
07/26/1999	844			200			• • •	cloudy80's	
08/12/1999	1000			160				-	
09/13/1999	1305	10		67	7 07	£2.(		ptcloudy70's	
10/05/1999	1006	10			7.87	536	6.1	clear70's	
11/17/1999	1421			75				clear70's	
12/08/1999	1312			33				ptcloudy50's	
				Frozen				clear30's	
01/12/2000	1333			Frozen				clear40's	
02/03/2000 03/09/2000	1012			Frozen				clear40's	
04/05/2000	1346 1308				SSIBLE SN	10M		ptcloudy30's	
05/03/2000	1042			Frozen				ptcloudy50's	
06/22/2000	1400			Dry				clear60's	
07/06/2000	1442			Dry				cloudy80's	
08/07/2000	1310			Dry				clear80's	
09/11/2000	1345			Dry				ptcloudy80's	
10/10/2000	1325			Dry				clear80's	
11/06/2000	1440			Dry Frozen				clear50's	
12/05/2000	905			Frozen				cloudy30's	
01/05/2001	1100			Frozen				clear30's	
02/05/2001	1352			Frozen				clear40's	
03/13/2001	1310			Frozen				ptcloudy40's clear40's	
04/20/2001	1024			Dry				ptcloudy40's	
05/09/2001	1444			Dry				clear60's	
06/26/2001	1339	8		136	8.61	667			ain
07/03/2001	843			90				clear80's	u
08/07/2001	1324			18.6			1	cloudy80's	
09/12/2001	915	7		2.2	8.54	693	11.6	ptcloudy70's	
10/17/2001 11/08/2001	945			Dry				cloudy50's	
12/12/2001	910 1426			Dry				clear40's	
12/12/2001	1425			Dry				clear20's	

### RILDA CANYON FLOW & QUALITY

### RILDA CANYON - FLUME #1(RCF1)

	. <	Field Measureme	nts>				
			Flow			Cond.	
Date	Time	Temp. (oC)	ft.	GPM	рН	(uS)	Weather
04-17-89	1120		DRY				PC 60's
01/12/1999	915			Frozen			ptcloudy30's
02/02/1999	1200				SIBLE SNOW		cloudy30's
03/03/1999	1153				SIBLE SNOW		cloudy50's
04/12/1999	1355				SIBLE SNOW		ptcloudy50's
05/11/1999	1330			499	SIBLE SIVOW		clear50's
06/11/1999	1200	8.3		1303	8.01	382	clear70's
07/26/1999	1010			296	6.01	302	cloudy80's
08/12/1999	1045			252			•
09/16/1999	1334	8.5		101	7.85	372	ptcloudy70's
10/05/1999	1049			78	7.65	312	cloudy70's clear70's
11/17/1999	1254			Frozen			
12/09/1999	951			Frozen			ptcloudy50's
01/12/2000	1338				SIBLE SNOW		cloudy20's
02/03/2000	1040				SIBLE SNOW		clear40's
03/09/2000	1410				SIBLE SNOW		clear40's
04/05/2000	1317				SIBLE SNOW		ptcloudy30's
05/05/2000	1030			902	DIBLE SNOW		ptcloudy50's
06/23/2000	1008	10.4		296	8.16	260	clear70's
07/06/2000	1350			296 90	8.10	369	cloudy80's
08/07/2000	1354			15			clear80's
09/13/2000	1325						ptcloudy80's
10/10/2000	1354			Damp			clear80's
11/28/2000	1330			10	IDI E CNOW		cloudy50's
12/05/2000	910				IBLE SNOW		cloudy40's
01/05/2001	1155				IBLE SNOW		clear30's
02/05/2001	1400				IBLE SNOW		clear40's
03/13/2001	1315				IBLE SNOW		ptcloudy40's
04/20/2001	1036				IBLE SNOW		clear40's
05/14/2001	1115				IBLE SNOW		ptcloudy40's
06/05/2001	1126	6.7		2842			clear60's
07/11/2001	915	5.7		1712	8.74	458	clear60's
08/07/2001	1350			274			clear80's
09/12/2001	1004	0.4		60			cloudy80's
10/17/2001	1004	8.4		36	8.17	435	ptcloudy70's
11/27/2001				71.5			cloudy50s
12/12/2001	900				IBLE SNOW		clear20's
14114UVI	1320			INACCESS	IBLE SNOW		

### RILDA CANYON FLOW & QUALITY

### RILDA CANYON - LEFT FORK (RCLF1)

•	<	Field Measure	ments	>			1
			Flow			Cond.	
Date	Time	Temp. (oC)	ft.	GPM	pН	(uS)	Weather
01/12/1999	952						
02/02/1999				Dry			ptcloudy30's
03/03/1999	1204			INACCESSI			cloudy30's
04/12/1999	1153			INACCESSI	BLE SNOW		cloudy50's
04/12/1999	1400			Dry			ptcloudy50's
05/10/1999	1127			38			cloudy40's
	1305	7.3		165	7.99	534	clear70's
07/26/1999	910	•		12			cloudy80's
08/12/1999	1124			11			ptcloudy70's
09/16/1999	1400			Dry			cloudy70's
10/05/1999	1119			Dry			clear70's
11/17/1999	1319			Dry			ptcloudy50's
12/08/1999	1320			Dry			clear30's
01/12/2000	1345			INACCESSI	BLE SNOW		clear40's
02/03/2000	1047			INACCESSI	BLE SNOW		clear40's
03/09/2000	1410			INACCESSI	BLE SNOW		ptcloudy30's
04/05/2000	1317			INACCESSI	BLE SNOW		ptcloudy50's
05/03/2000	1059			27			clear60's
06/23/2000	1114	10		5.7	8.43	519	cloudy80's
07/06/2000	1416			Dry			clear80's
08/07/2000	1321			Dry			ptcloudy80's
09/13/2000	1352			Dry			clear80's
10/10/2000	1331			Dry			cloudy50's
11/28/2000	1337			Dry			cloudy40's
12/05/2000	914			Dry			clear30's
01/05/2001	1121			Dry			clear40's
02/05/2001	1400			INACCESSII	RI F SNOW		ptcloudy40's
03/13/2001	1315			INACCESSII			clear40's
04/20/2001	1034			Dry	DLL SINOW		
05/14/2001	1235			100			ptcloudy40's
06/29/2001	821	7.9		13.6	8.62	5.7	clear60's
07/03/2001	904			5	8.02	567	clear80's
08/07/2001	1415			_			clear80's
09/12/2001	1040			Dry			cloudy80's
10/17/2001	945			Dry			ptcloudy70's
11/08/2001	953			Dry			cloudy50's
12/12/2001	1320			Dry	N E ONOM:	i	clear40's
	1320			INACCESSI	BLE SNOW		clear20's

### RILDA CANYON FLOW & QUALITY

### RILDA CANYON - LEFT FORK (RCLF2)

	<	Field Measure	ments>				1	
			Flow			Cond.	1	
Date	Time	Temp. (oC)	ft.	GPM	pН	(uS)	Weather	Comments
01/12/1999	942			Frozen			mtalaudu20'	
02/02/1999	1212				BLE SNOW		ptcloudy30' cloudy30's	S
03/03/1999	1153				BLE SNOW		cloudy50's	
04/12/1999	1409		•••	Dry	BEE SHOW		ptcloudy50's	'a
05/10/1999	1118			37.5			cloudy40's	3
06/11/1999	1300	8		160	7.95	539	clear 70's	
07/26/1999	942			10	7.55	339	cloudy80's	
08/12/1999	1132			9.2			ptcloudy70'	<b>c</b>
09/16/1999	1416			Dry			cloudy 70's	3
10/05/1999	1123			Dry			clear70's	
11/17/1999	1324			Dry			ptcloudy50's	<b>.</b>
12/08/1999	1325			Dry			clear30's	3
01/12/2000	1350		IN	•	BLE SNOW		clear40's	
02/03/2000	1050				BLE SNOW		clear40's	
03/09/2000	1410				BLE SNOW		ptcloudy30's	•
04/05/2000	1317				BLE SNOW		ptcloudy50's	
05/03/2000	1052			25	DEE 5110 11		clear60's	3
06/23/2000	1105	9.1		7.5	8.38	533	cloudy80's	
07/06/2000	1410			Dry	0.50	333	clear80's	
08/07/2000	1325			Dry			ptcloudy80's	5
09/13/2000	1357			Dry			clear80's	•
10/10/2000	1340			Dry			cloudy50's	
11/28/2000	1341			Dry			cloudy40's	
12/05/2000	915			Dry			clear30's	
01/05/2001	1124			Dry			clear40's	
02/05/2001	1400		INA	•	BLE SNOW		ptcloudy40's	•
03/13/2001	1315				BLE SNOW		clear40's	•
04/20/2001	1030			Dry	5		ptcloudy40's	•
05/14/2001	1220			104			clear60's	•
06/29/2001	806	7.9		14.6	8.25	539	clear80's	
07/03/2001	856			8	5.20	557	clear80's	
08/07/2001	1420			Dry			cloudy80's	
09/12/2001	1045			Dry			ptcloudy70's	•
10/17/2001	948			Dry			cloudy50's	
11/08/2001	1000			Dry			clear40's	
12/12/2001	1320		INA	•	BLE SNOW		clear20's	
							J.Cu. 203	
							ľ	

### RILDA CANYON FLOW & QUALITY

### RILDA CANYON - FLUME #2 (RCF2)

	<	Field Measure	ments	>			•
			Flow			Cond.	
Date	Time	Temp. (oC)	ft.	<b>GPM</b>	pН	(uS)	Weather
01404000							
01/12/1999	1003			Frozen			ptcloudy30's
02/02/1999	1230			Frozen			cloudy30's
03/03/1999	1220			Frozen			cloudy50's
04/12/1999	1418			Dry			ptcloudy50's
05/10/1999	1133			608			cloudy40's
06/15/1999	1355	9.5		3474	7.9	388	cloudy70's
07/26/1999	1043			339			cloudy80's
08/12/1999	1138			300			ptcloudy70's
09/16/1999	1430			55.36			cloudy70's
10/05/1999	1140			36			clear70's
11/17/1999	1335			Dry			ptcloudy50's
12/08/1999	1330			Dry			clear30's
01/12/2000	1356			Dry			clear40's
02/03/2000	1053			Dry			clear40's
03/09/2000	1410			INACCESSII	RI E SNOW		ptcloudy30's
04/05/2000	1317			INACCESSII			1 ' '
05/03/2000	1113			927	DEL SINOW		ptcloudy50's clear60's
06/23/2000	1126	8		227	8.21	379	
07/06/2000	1430	-		35.5	0.21	319	cloudy80's clear80's
08/07/2000	1443			Dry			1
09/13/2000	1405			Dry			ptcloudy80's
10/10/2000	1437			•			clear80's
11/28/2000	1345			Dry Dry			cloudy50's
12/05/2000	918						cloudy40's
01/05/2001	1130			Dry			clear30's
02/05/2001	1400			Dry	N. F. ONIONI		clear40's
03/13/2001	1315			INACCESSII			ptcloudy40's
04/20/2001	1054			INACCESSII	BLE SNOW		clear40's
05/14/2001	1241			Dry			ptcloudy40's
06/29/2001	857	7.7		2529			clear60's
07/03/2001	922	7.7		209	8.52	449	clear80's
08/07/2001	1433			103			clear80's
09/12/2001				78			cloudy80's
10/17/2001	1055			Dry			ptcloudy70's
11/08/2001	1050			Dry			cloudy50's
12/12/2001	1004			Dry			clear40's
12/12/2001	1346			Dry			clear20's

### RILDA CANYON FLOW & QUALITY

### RILDA CANYON - FLUME #3 (RCF3)

Date   Time   Temp. (oC)   ft.   GPM   pH   (uS)   Oxygen   Weather   Comment		<		Field Meas	surements	3	******************************	>	1	
1011/2/1999   1013	_			Flow			Cond.	Dis.		
02/02/1999 1240 161	Date	Time	Temp. (oC)	ft.	GPM	pН	(uS)	Oxygen	Weather	Comments
02/02/1999 1240 161	01/12/1999	1012					*************			
03/03/1999 1242 4.5 176 7.72 732 5.8 cloudy30's cloudy50's ptcloudy50's ptcloudy50's ptcloudy50's ptcloudy50's ptcloudy50's cloudy40's cloudy40's cloudy40's cloudy40's cloudy40's cloudy40's cloudy40's cloudy40's cloudy40's cloudy40's cloudy40's cloudy40's cloudy40's cloudy80's ptcloudy70's cloudy80's ptcloudy70's cloudy70's cloudy80's ptcloudy70's cloudy80's ptcloudy70's cloudy80's ptcloudy70's cloudy80's ptcloudy70's cloudy80's ptcloudy70's cloudy70's cloudy80's ptcloudy70's cloudy80's ptcloudy70's cloudy70's cloudy80's c										
04/12/1999 1424 161			4.5						cloudy30's	
05/10/1999 1136 709 1047 380			4.3			7.72	732	5.8	cloudy50's	
06/15/1999 1424 9.3 3500 8.05 391 6.9 cloudy40's cloudy80's profile of the control of the contro									ptcloudy50's	;
07/26/1999         1047         380         cloudy70's cloudy70's ptcloudy70's ptcloudy70's ptcloudy70's cloudy80's ptcloudy70's cloudy80's ptcloudy70's cloudy80's ptcloudy70's cloudy80's ptcloudy70's cloudy80's ptcloudy70's cloudy80's ptcloudy70's cloudy80's ptcloudy70's cloudy80's ptcloudy70's cloudy80's ptcloudy70's cloudy80's ptcloudy80's cloudy80's ptcloudy80's cloudy80's ptcloudy80's cloudy80's ptcloudy80's cloudy80's			0.2						cloudy40's	
08/12/1999 1142 3339 ptcloudy70's cloudy70's			9.3			8.05	391	6.9	cloudy70's	
09/16/1999   1439   8.9   120   7.5   572   6.1   cloudy70's   cloudy70's   cloudy70's   cloudy70's   cloudy70's   cloudy70's   cloudy70's   cloudy70's   cloudy70's   cloudy70's   cloudy70's   cloudy70's   cloudy70's   cloudy70's   cloudy50's   cloudy50's   cloudy50's   cloudy20's   cloudy20's   cloudy30's   cloud									cloudy80's	
10/05/1999									ptcloudy70's	1
11/17/1999   1346   95			8.9			7.5	572	6.1	cloudy70's	
12/09/1999 1108 2.1 90 7.6 747 10.7 cloudy50's									clear70's	
01/12/2000         1400         70         cloudy20's         cloudy20's         clear40's         clear60's         clear80's         clear80's         clear80's         clear80's         clear80's         clear80's         cloudy80's         clear80's         cloudy80's         clear80's         cloudy80's         clear80's         cloudy80's         rain         cloudy40's         clear80's         cloudy40's         rain         cloudy40's         clear30's         clear40's         clear60's<									ptcloudy50's	
02/03/2000         1056         65         clear40's           03/09/2000         1410         INACCESSIBLE SNOW         ptcloudy30's           04/05/2000         1317         INACCESSIBLE SNOW         ptcloudy50's           05/03/2000         1124         1134         clear60's           06/22/1999         1446         9.5         262         7.87         487         8.4         cloudy80's           07/06/2000         1436         103         clear80's         clear80's           08/07/2000         1507         103         ptcloudy80's         clear80's           09/13/2000         1419         10.5         78         8.24         735         7.5         clear80's           09/13/2000         1445         90         cloudy50's         rain         cloudy50's         rain           11/28/2000         1403         100         cloudy40's         clear30's           01/05/2001         1155         90         clear30's         clear40's           02/05/2001         1400         INACCESSIBLE SNOW         ptcloudy40's           03/13/2001         1315         INACCESSIBLE SNOW         clear40's           04/20/2001         1057         103         ptcloudy40's			2.1			7.6	747	10.7	cloudy20's	
03/09/2000 1410 INACCESSIBLE SNOW ptcloudy30's ptcloudy50's 05/03/2000 1124 1134 clear60's 06/22/1999 1446 9.5 262 7.87 487 8.4 cloudy80's 08/07/2000 1436 103 clear80's 09/13/2000 1419 10.5 78 8.24 735 7.5 clear80's 09/13/2000 1445 90 cloudy50's rain 11/28/2000 1403 100 cloudy40's 01/05/2001 1555 90 clear40's 01/05/2001 1555 90 clear40's 02/05/2001 1400 INACCESSIBLE SNOW ptcloudy40's 03/13/2001 1315 INACCESSIBLE SNOW ptcloudy40's 03/13/2001 1315 INACCESSIBLE SNOW ptcloudy40's 04/20/2001 1057 103 118 clear60's 04/20/2001 1057 103 05/14/2001 1244 3118 clear60's 06/29/2001 908 7.6 339 8.29 530 clear80's 04/20/2001 108 7.9 64 7.39 867 11 ptcloudy40's 09/12/2001 1108 7.9 64 7.39 867 11 ptcloudy70's 09/12/2001 1100 75 cloudy50's clear40's 04/12/2001 1100 75 cloudy50's 04/20/2001 11					70				clear40's	
04/05/2000 1317 INACCESSIBLE SNOW ptcloudy30's ptcloudy30's ptcloudy50's object of the ptcloudy50's object of the ptcloudy50's object of the ptcloudy50's object of the ptcloudy50's object object of the ptcloudy50's object of the ptcloudy80's object objec					65				clear40's	
1124					INACC	ESSIBLI	E SNOW		ptcloudy30's	}
06/22/1999         1446         9.5         262         7.87         487         8.4         cloudy80's clear80's ptcloudy80's clear80's ptcloudy80's clear80's ptcloudy80's clear80's ptcloudy80's clear80's ptcloudy80's clear80's cloudy50's rain cloudy50's rain cloudy50's rain cloudy40's cloudy50's rain cloudy40's clear40's ptcloudy40's clear40's clear40's ptcloudy40's clear60's clear80's clear80's clear80's clear80's clear80's clear80's clear80's clear80's clear80's cloudy80's ptcloudy80's ptcloudy80's clear80's clear80's clear80's cloudy80's ptcloudy80's clear80's cloudy80's ptcloudy70's clear80's cloudy80's ptcloudy70's clear80's cloudy80's ptcloudy70's clear80's cloudy50's clear40's ptcloudy70's clear40's ptcloudy70's clear40's ptcloudy70's clear40's ptcloudy70's clear40's clear40's ptcloudy70's clear40's clear40's ptcloudy70's clear40's cl					INACC	ESSIBLE	E SNOW		ptcloudy50's	;
07/06/2000         1436         103         clear80's           08/07/2000         1507         103         ptcloudy80's           09/13/2000         1419         10.5         78         8.24         735         7.5         clear80's           10/10/2000         1445         90         cloudy50's         rain           11/28/2000         1403         100         cloudy40's         cloudy40's           12/05/2000         950         2.7         103         7.91         902         10.5         clear30's           01/05/2001         1400         INACCESSIBLE SNOW         ptcloudy40's         clear40's           03/13/2001         1315         INACCESSIBLE SNOW         ptcloudy40's           04/20/2001         1057         103         ptcloudy40's           05/14/2001         1244         3118         clear60's           06/29/2001         908         7.6         339         8.29         530         clear80's           08/07/2001         1439         103         cloudy80's         clear80's           09/12/2001         1108         7.9         64         7.39         867         11         ptcloudy70's           11/08/2001         1010 <td></td> <td></td> <td></td> <td></td> <td>1134</td> <td></td> <td></td> <td></td> <td>•</td> <td></td>					1134				•	
07/06/2000         1436         103         clear80's           08/07/2000         1507         103         ptcloudy80's           09/13/2000         1419         10.5         78         8.24         735         7.5         clear80's           10/10/2000         1445         90         cloudy50's         rain           11/28/2000         1403         100         cloudy40's         cloudy40's           12/05/2000         950         2.7         103         7.91         902         10.5         clear30's           01/05/2001         1155         90         clear40's         ptcloudy40's         clear40's           03/13/2001         1315         INACCESSIBLE SNOW         ptcloudy40's         clear40's           04/20/2001         1057         103         ptcloudy40's         clear40's           05/14/2001         1244         3118         clear60's         clear60's           07/03/2001         926         227         clear80's         clear80's           08/07/2001         1439         103         cloudy80's         cloudy80's           09/12/2001         1108         7.9         64         7.39         867         11         ptcloudy70's			9.5		262	7.87	487	8.4	cloudy80's	
08/07/2000         1507         103         ptcloudy80's           09/13/2000         1419         10.5         78         8.24         735         7.5         clear80's           10/10/2000         1445         90         cloudy50's         rain           11/28/2000         1403         100         cloudy40's         cloudy40's           12/05/2000         950         2.7         103         7.91         902         10.5         clear30's           01/05/2001         1155         90         clear40's         ptcloudy40's         clear40's           02/05/2001         1400         INACCESSIBLE SNOW         ptcloudy40's         clear40's           03/13/2001         1315         INACCESSIBLE SNOW         clear40's         ptcloudy40's           04/20/2001         1057         103         ptcloudy40's         clear60's           05/14/2001         1244         3118         clear60's         clear80's           06/29/2001         908         7.6         339         8.29         530         clear80's           08/07/2001         1439         103         cloudy80's         cloudy80's           10/17/2001         1100         75         cloudy50's         clo					103				-	
09/13/2000         1419         10.5         78         8.24         735         7.5         clear80's           10/10/2000         1445         90         cloudy50's rain           11/28/2000         1403         100         cloudy40's           12/05/2000         950         2.7         103         7.91         902         10.5         clear30's           01/05/2001         1155         90         clear40's         clear40's         naccessible snow         ptcloudy40's         rain           02/05/2001         1400         INACCESSIBLE SNOW         ptcloudy40's         clear40's         naccessible snow         clear40's         ptcloudy40's         clear40's         naccessible snow         clear60's         clear60's         clear60's         clear60's         clear60's         clear60's         clear60's         clear80's         clear80's         clear80's         clear80's         clear80's         clear80's         cloudy80's         cloudy80's         10/17/2001         1100         75         cloudy50's         cloudy50's         clear40's         clear40's <td< td=""><td></td><td></td><td></td><td></td><td>103</td><td></td><td></td><td></td><td></td><td></td></td<>					103					
10/10/2000 1445 11/28/2000 1403 11/28/2000 950 2.7 103 7.91 902 10.5 clear30's 01/05/2001 1155 90 clear40's 02/05/2001 1400 INACCESSIBLE SNOW ptcloudy40's 03/13/2001 1315 INACCESSIBLE SNOW clear40's 04/20/2001 1057 103 ptcloudy40's 05/14/2001 1244 3118 clear60's 06/29/2001 908 7.6 339 8.29 530 clear80's 07/03/2001 926 227 clear80's 08/07/2001 1439 103 cloudy80's 09/12/2001 1108 7.9 64 7.39 867 11 ptcloudy70's 10/17/2001 1100 75 11/08/2001 1010 77 12/12/2001 1353 4			10.5		78	8.24	735	7.5	- •	
11/28/2000         1403         100         cloudy40's           12/05/2000         950         2.7         103         7.91         902         10.5         clear30's           01/05/2001         1155         90         clear40's         clear40's           02/05/2001         1400         INACCESSIBLE SNOW         ptcloudy40's           03/13/2001         1315         INACCESSIBLE SNOW         clear40's           04/20/2001         1057         103         ptcloudy40's           05/14/2001         1244         3118         clear60's           06/29/2001         908         7.6         339         8.29         530         clear80's           07/03/2001         926         227         clear80's         clear80's           08/07/2001         1439         103         cloudy80's           09/12/2001         1108         7.9         64         7.39         867         11         ptcloudy70's           10/17/2001         1100         75         cloudy50's         cloudy50's           11/08/2001         1353         4         40         40         40         40         40         40         40         40         40         40 <td< td=""><td></td><td></td><td></td><td></td><td>90</td><td></td><td></td><td></td><td></td><td>rain</td></td<>					90					rain
12/05/2000 950 2.7 103 7.91 902 10.5 clear30's 01/05/2001 1155 90 clear40's 02/05/2001 1400 INACCESSIBLE SNOW ptcloudy40's 03/13/2001 1315 INACCESSIBLE SNOW clear40's 04/20/2001 1057 103 ptcloudy40's 05/14/2001 1244 3118 clear60's 06/29/2001 908 7.6 339 8.29 530 clear80's 07/03/2001 926 227 clear80's 08/07/2001 1439 103 cloudy80's 09/12/2001 1108 7.9 64 7.39 867 11 ptcloudy70's 10/17/2001 1100 75 11/08/2001 1010 77 12/12/2001 1353 4					100				, •	
01/05/2001         1155         90         clear40's           02/05/2001         1400         INACCESSIBLE SNOW         ptcloudy40's           03/13/2001         1315         INACCESSIBLE SNOW         clear40's           04/20/2001         1057         103         ptcloudy40's           05/14/2001         1244         3118         clear60's           06/29/2001         908         7.6         339         8.29         530         clear80's           07/03/2001         926         227         clear80's         clear80's           08/07/2001         1439         103         cloudy80's           09/12/2001         1108         7.9         64         7.39         867         11         ptcloudy70's           10/17/2001         1100         75         cloudy50's         cloudy50's           11/08/2001         1010         77         cloudy50's         clear40's		950	2.7		103	7.91	902	10.5	•	
02/05/2001         1400         INACCESSIBLE SNOW         ptcloudy40's           03/13/2001         1315         INACCESSIBLE SNOW         clear40's           04/20/2001         1057         103         ptcloudy40's           05/14/2001         1244         3118         clear60's           06/29/2001         908         7.6         339         8.29         530         clear80's           07/03/2001         926         227         clear80's         clear80's           08/07/2001         1439         103         cloudy80's           09/12/2001         1108         7.9         64         7.39         867         11         ptcloudy70's           10/17/2001         1100         75         cloudy50's         cloudy50's           11/08/2001         1010         77         cloudy50's         clear40's		1155			90					
03/13/2001 1315 INACCESSIBLE SNOW clear40's 04/20/2001 1057 103 ptcloudy40's 05/14/2001 1244 3118 clear60's 06/29/2001 908 7.6 339 8.29 530 clear80's 07/03/2001 926 227 clear80's 08/07/2001 1439 103 cloudy80's 09/12/2001 1108 7.9 64 7.39 867 11 ptcloudy70's 10/17/2001 1100 75 cloudy50's 11/08/2001 1010 77 cloudy50's 12/12/2001 1353 4		1400			INACCI	ESSIBLE	E SNOW			
04/20/2001       1057       103       ptcloudy40's         05/14/2001       1244       3118       clear60's         06/29/2001       908       7.6       339       8.29       530       clear80's         07/03/2001       926       227       clear80's       clear80's         08/07/2001       1439       103       cloudy80's         09/12/2001       1108       7.9       64       7.39       867       11       ptcloudy70's         10/17/2001       1100       75       cloudy50's       cloudy50's       cloudy50's         11/08/2001       1353       4       40       40       2	03/13/2001									
05/14/2001       1244       3118       clear60's         06/29/2001       908       7.6       339       8.29       530       clear80's         07/03/2001       926       227       clear80's       clear80's         08/07/2001       1439       103       cloudy80's         09/12/2001       1108       7.9       64       7.39       867       11       ptcloudy70's         10/17/2001       1100       75       cloudy50's       cloudy50's         11/08/2001       1010       77       cloudy50's       clear40's	04/20/2001	1057								
06/29/2001     908     7.6     339     8.29     530     clear80's       07/03/2001     926     227     clear80's       08/07/2001     1439     103     cloudy80's       09/12/2001     1108     7.9     64     7.39     867     11     ptcloudy70's       10/17/2001     1100     75     cloudy50's     cloudy50's       11/08/2001     1353     4     48     0     20     20     20		1244								
07/03/2001     926     227     clear80's       08/07/2001     1439     103     cloudy80's       09/12/2001     1108     7.9     64     7.39     867     11     ptcloudy70's       10/17/2001     1100     75     cloudy50's     cloudy50's       11/08/2001     1353     4     48     0     20     20	_	908	7.6			8.29	530			
08/07/2001     1439     103     clears s       09/12/2001     1108     7.9     64     7.39     867     11     ptcloudy70's       10/17/2001     1100     75     cloudy50's     cloudy50's       11/08/2001     1353     4     48     0     200     200     200	07/03/2001	926					550			
09/12/2001 1108 7.9 64 7.39 867 11 ptcloudy70's 10/17/2001 1100 75 11/08/2001 1010 77 12/12/2001 1353 4	08/07/2001	1439								
10/17/2001 1100 75 11/08/2001 1010 77 12/12/2001 1353 4		1108	7.9			7.39	867	11	-	
11/08/2001 1010 77 12/12/2001 1353 4 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	10/17/2001	1100				,	007	11	- •	
12/12/2001 1353 4 40 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	11/08/2001	1010						į	<del>-</del>	
clear20's	12/12/2001	1353	4			R	825		_	
			•		70	O	043	9	clear20's	

### RILDA CANYON FLOW & QUALITY

### RILDA CANYON - WEIR #4 (RCW4)

	<	Field	Measurements Flow		Cond.	> Dis.			
Date	Time	Temp. (oC)	ft. GPM	pН	(uS)	Oxygen	Weather	Comments	
01/12/1999	1046		Frozen						
02/02/1999	1319		157				clear30's		
03/03/1999	1340	3	157	0.07			cloudy30's		
04/12/1999	1435		125.1	8.07	698	6	cloudy50's		
05/10/1999	1142		840				ptcloudy50's		
06/15/1999	1540	8.8	3550	0.21			cloudy40's		
07/26/1999	1128	0.0	551	8.21	411	6.8	cloudy70's		
08/12/1999	1148		464.8				cloudy80's		
09/16/1999	1522	7.9	183.9	0.26			ptcloudy70's		
10/05/1999	1323	,,,	183.9	8.25	648	5.6	cloudy70's		
11/17/1999	1410		174,7				clear70's		
12/08/1999	1339		Frozen				ptcloudy50's		
01/12/2000	1415		175				clear30's		
02/03/2000	1126						clear40's		
03/09/2000	1407	2.8	175				clear40's		
04/05/2000	1314	2.0	157	7.54	717	9.8	ptcloudy30's		
05/03/2000	1136		183.9				ptcloudy50's		
06/22/2000	1544	10.4	1207				clear60's		
07/06/2000	1516	10.4	417	8.17	556	8.9	cloudy80's		
08/07/2000	1519		157				clear80's		
09/13/2000	1525	11	157 125	0.4			ptcloudy80's		
10/10/2000	1516			8.6	720	8.7	clear80's		
11/28/2000	1421		157				cloudy50's	rain -snow	
12/05/2000	1039	-0.5	157				cloudy40's		
01/05/2001	1228	-0.5	157	7.83	908	14	clear30's		
02/05/2001	1405		157			İ	clear40's		
03/13/2001	1320	5.4	174				ptcloudy40's		
04/20/2001	1106	3.4	175	8.67	845	11.3	clear40's		
05/14/2001	1251		203				ptcloudy40's		
06/29/2001	958	7.9	3117			ł	clear60's		
07/11/2001	945	7.9	448	8.25	660	*	clear80's	*DO Probe Not Functionin	
08/07/2001	1446		331			İ	clear80's		
09/12/2001	1118	9.2	203			j	cloudy80's		
10/17/2001	1128	7.4	117	7.94	889	10.9	ptcloudy70's		
11/08/2001	1016		132				cloudy60's		
12/12/2001	1416	0.7	124				clear40's		
	1710	0.7	140.5	8.23	867	11.8	clear20's		

**EAST MOUNTAIN** 

### SPRING DISCHARGE RECESSION STUDY YEAR 2001

SPRING		JUL	AUG	SEP	ОСТ
79-10	Flow (GPM)	10.3	5.7	5.1	3.2
	Temp. (C)	5.2	5.4	5.6	3.3
SHEBA	Flow (GPM)	2.9	2.2	1.7	1.0
SPRINGS	S Temp. (C)	6.0	6.7	7.4	5.1
ELK	Flow (GPM)	131.0	85.0	73.0	67.0
SPRING	Temp. (C)	4.0	3.9	4.0	3.5
79-35	Flow (GPM)	4.5	2.5	2.0	1.6
•	Temp. (C)	4.6	5.3	4.9	5.5
79-26	Flow (GPM)	4.3	2.4	2.0	1.6
	Temp. (C)	7.7	5.2	5.0	5.5
79-29	Flow (GPM)	1.5	1.4	1.4	1.0
	Temp. (C)	4.4	4.6	5.2	3.4
84-56	Flow (GPM)	0.8	0.5	0.5	0.4
	Temp. (C)	5.5	5.6	5.9	3.6
80-44	Flow (GPM) Temp. (C)	est. < 0.5 gpm	est.<0.5gpm	<0.5gpm	<0.5gpm
80-46	Flow (GPM)	2.1	2.3	1.0	Damp
	Temp. (C)	4.6	6.3	6.2	_ <del>p</del>
BURNT	Flow (GPM)	5.6	5.3	10.0	6.0
TREE	Temp. (C)	5.4	6.6	7.0	5.6
79-23	Flow (GPM) Temp. (C)	dry	dry	dry	dry
82-52	Flow (GPM)	8.0	6.2	5.8	4.1
	Temp. (C)	4.1	4.5	4.2	4.3

### EAST MOUNTAIN SPRINGS DISCHARGE

2001

Spring	Date Sampled	Flow (GPM)	Temp. C	Date Sampled	Flow (GPM)	Temp. C	Seasonal Net Change %
Sheba	07/25/2001	2.9	6.0	10/09/2001	1.0	5.1	(5.52
Elk Spring	07/25/2001	131.0	4.0	10/08/2001	67.0	3.5	-65.52
Burnt Tree	07/26/2001	5.6	5.4	10/04/2001	6.0	5.6	-48.85
Jerk Water				10/04/2001	0.0	3.0	7.14
Pine Springs							
Pine Sp. Trough							
Ted's Tub	07/26/2001	24.0	5.7	10/09/2001	6.6	3.3	-72.50
79-1					0.0	3.3	-72.50
79-2	07/26/2001	1.9	4.6	10/04/2001	1.2	4.8	-36.84
79-3						1.0	-50.04
79-4							
79-5							
79-6							
79-7							
79-8							
79-9							
79-10	07/25/2001	10.3	5.2	10/09/2001	3.2	3.3	-68.93
79-11							00.55
79-12	07/27/200	0.5	est., sheet flow	10/09/2001		damp	
79-13							
79-14							
79-15	07/26/2001	10.5	5.0	10/109/2001	3.9	2.9	-62.86
79-16							
79-17							
79-18							
79-19							
79-20							
79-21							
79-22							
79-23	07/26/2001		dry	10/04/2001	dry		
79-24 70-25	07/26/2001		dry	10/04/2001	dry		
79-25							
79-26 79-27	07/25/2001	4.3	7.7	10/08/2001	1.6	5.5	-62.79
79-27 79-28	0.5.10.5.10.5.1						
79-28 79-29	07/25/2001	1.2	5.9	10/09/2001	0.4	4.8	-65.83
9-30	07/25/2001	1.5	4.4	10/08/2001	1.0	3.4	-33.33
9-31							
	0.500						
'9-32 '9-33	07/25/2001	0.6	10.4	10/08/2001	0.4	5.8	-35.48
'9-34	07/24/200						
9-35	07/26/2001	8.4	4.8	10/09/2001	0.3	4.4	
9-36	07/25/2001	4.5	4.6	10/08/2001	1.6	5.5	-64.44
9-37	0.00						
9-38	07/27/2001	3.3	5.1	10/09/2001	1.4	4.8	-57.58
9-39	000						
9-40	07/26/2001	1.3	4.5	10/09/2001		dry	
0-41	07/26/2001	4.8	3.1	10/09/2001	0.5	3.0	-90.00

### EAST MOUNTAIN SPRINGS DISCHARGE

2001

Spring	Date Sampled	Flow (GPM)	Temp. C	Date Sampled	Flow (GPM)	Temp. C	Seasonal Net Change %
80-42 80-43				· . · · · · · · · · · · · · · · · · · ·			
80-43 80-44	07/26/2001		DAMP	10/04/2001		dry	
80-45	07/26/2001	0.5	est., sheet flow	10/09/2001	0.5	est., sheet	flow
80-46	07/2//2001						
80-47	07/26/2001	2.1	4.6	10/04/2001		damp	
80-48	07/26/2001	9.4	4.0	10/04/2001	6.8	4.5	-27.66
80-49	07/25/2001	3.8	6.4	10/08/2001	1.6	6.9	-57.89
80-50	08/20/000						
82-51	07/30/2001	0.8	7.4	10/11/2001	0.4	6.3	-52.50
82-52	07/26/2001	1.3	8.7	10/04/2001	0.1		-92.31
84-53	07/26/2001	8.0	4.1	10/04/2001	4.1	4.3	-48.75
84-54							
84-55							
84-56	07/26/2001						
85-57	07/26/2001	0.8	5.5	10/09/2001	0.4	3.6	-48.68
86-58							
86-59							
89-60	07/27/2001						
89-61	07/27/2001	7.6	7.6	10/09/2001	1.0	3.2	-86.84
89-62	07/25/2001	47.0	4.1	10/08/2001	20.0	3.7	-57.45
89-63							
89-64							
89-65	07/25/2001						
89-66	07/25/2001	1.2	6.0	10/08/2001	0.7	6.3	-45.00
89-67	07/25/2001	1.0	6.4	10/08/2001	< 0.05		
89-68	07/25/2001	4.9	4.1	10/08/2001	2.8	4.3	-42.86
89-69	07/25/2001	1.0	8.3	10/08/2001	0.5	8.1	-51.00
89-70							
89-71							
91-72	07/27/2001						
91-73	07/27/2001	8.2	8.5	10/10/2001	8.3	8.5	1.22
71-73	07/27/2001	0.9	8.8	10/10/2001	0.51	6.7	-44.57
TOTAL FLOW FO	R JULY	305.2			4.5.4.5		
(W\OUT 80-50, 91-		000.2		Not Cha	134.9		
,				Net Change - Average			-52.30
TOTAL FOR JULY	Y 2000 = 205.4 GPM			Net Change - B	y Volume		-55.79

TOTAL FOR JULY 2000 = 205.4 GPM JULY 2001 48 % HIGHER THAN JULY 2000

### TRAIL MOUNTAIN

### SPRING DISCHARGE RECESSION STUDY **YEAR 2001**

		11	AR 200.	1		
SPRING		JUL	AUG	SEP	ОСТ	Seasonal Net Change %
T-6	Flow (GPM)	4.8	2.2	1.7	1.0	-79.2
18-2-1	Temp. (C)	10	9	8	7	-79.2
T-8	Flow (GPM)	0.4	0.3	0.3	0.3	-31.6
17-21-1	Temp. (C)	13	10	10	6	-51.0
<b>T-9</b>	Flow (GPM)	6.0	3.3	3.0	1.5	-75.0
17-22-1	Temp. (C)	8	6	6	6	-/3.0
T-10	Flow (GPM)	0.2	0.2	0.2		
17-26-4	Temp. (C)	15	7	7	0.0	
T-14	Flow (GPM)	0.5	0.5	0.5		
17-25-1	Temp. (C)	16	9	9	0.0	
T-14A 17-26-5	Flow (GPM) Temp. (C)	0.0	0.0	0.0	0.0	
T-15 17-35-1	Flow (GPM) Temp. (C)	0.0	0.0	0.0	0.0	
T-16 17-35-2	Flow (GPM) Temp. (C)	0.0	0.0	0.0	0.0	
TM-23*	Flow (GPM) Temp. (C)	0.0	0.0	0.0	0.0	
	JULY TOTAL FOR JULY 2001 =			OCTOBER Net Change - Net Change -	Average	<b>2.76</b> -61.92 -76.77

**JULY 2001 74% LOWER THAN JULY 2000** 

DEER CREEK MINE / DISCHARGE

### PERMIT # 0023604-002 (DCD) Quality

			_		Quantity	
Date	Time	GPM	Temp. ( <sup>O</sup> C)			
====		GrM	( )	Comments	Month	Gallons/day
08/05/1999	1545	2598	12			
09/07/1999	1625	8984	11		November	2,105,088
10/07/1999	1050	1836	9		December	1,635,004
10/20/1999	1457	1074	13		January	820,252
11/09/1999	1345	1230	10		February	909,991
12/08/1999	1500	1523	8		March	1,091,390
01/11/2000	1430	600	10		April	1,268,208
01/25/2000	1431	750	12		May	2,164,952
02/10/2000	1440	1484	8		June	3,361,872
03/07/2000	1329	600	12		July	2,941,692
04/03/2000	1350	800	12		August	2,808,274
04/25/2000	1328	600	13		September	2,550,163
05/08/2000	1210	1500	11		October	2,417,583
06/08/2000	1200	2480	11		November	1,982,105
07/20/2000	1430	2324	11		December	1,899,253
08/07/2000	910	2070	11		January	1,784,044
09/07/2000	1005	1758	11		February	1,784,044
09/20/2000	1000	1738	14		March	1,784,044
10/16/2000	1030	1699	10		April	1,765,354
11/06/2000	1020	1602			May	2,432,801
11/08/2000	1029	1543	8 12		June	2.602,987
12/14/2000	1440	1000			July	2,800,215
01/09/2001	1025	1445.3	9		August	2,803,090
02/05/2001	1500	1000	9		September	2,618,261
02/27/2001	1310	1000	8		October	2,459,562
03/20/2001	1150	53.9	11		November	2,354,218
04/13/2001	1200		4		December	2,272,320
04/25/2001	937	1000	10			
05/08/2001	1425	1601	12			
06/18/2001	1425	1816	12			
07/26/2001	1440	2109	15			
08/22/2001		1973	13			
09/18/2001	831	1953	13			
10/23/2001	1400	1875	13			
	945	1836	13			
11/13/2001	1600	1315	13			
12/13/2001	1528	1500	13			

### OLIPHANT MINE - STRAIGHT CANYON

(T-18) Quality

			Temp.		Cond.		Quantity Dis.	
Date	Time	GPM	(°C)	рН	(uS)	Oxygen	Gallons/day	Comments
03/20/1998	1215	Dry						
06/11/1998	1115	0.5	no s	sample sheet	flow			
09/03/1998	1331	0.6	12	7.39	615	6.0	0.44	
10/02/1998	1312	0.51		7.57	013	5.9	864	
11/03/1998	1146	0.51						
12/09/1998	1410	0.52	3	6.94	575	0.2	<b></b>	
03/01/1999	1022	0.5	7	7.41	554	8.3 5.7	749	
06/08/1999	1016	0.5	9	7.32	555		720 720	
09/02/1999	1252	0.5	10	7.4	568	7.2 5.7	720 720	
12/06/1999	1249	0.43	5	7.35	569		720	
03/08/2000	933	0.5	6	7.58	549	9.8	619	
06/15/2000	1115	0.5	11	727	574	8.3	720	
09/12/2000	1515	0.4	11	7.76	564	6.8	720	
12/04/2000	1005	0.37	5	7.24	629	7.1	576	
03/08/2001	1055	0.37	7	8.05	618	9.5	533	
06/06/2001	1025	0.36	10	7.39	669	2.3	533	
09/26/2001	1121	0.17	12	7.75	657	*	518	*DO Probe Not Functi
12/10/2001	1218	0.1	<del>-</del>	7.73	037	*	245	no sample taken

# TRAIL MOUNTAIN MINE - COTTONWOOD CANYON PERMIT # UTG040003-002 (TRAIL MOUNTAIN MINE DISCHARGE to COTTONWOOD CANYON CREEK)

			Qu	ality			Quantity
				Temp.			Quantity
	Date	Time	GPM	(°C)	Comments	Month	Gallons/day
	01/08/1999	020	1.40				
	01/08/1999		140	10.8		June	465,758
	02/09/1999		180	12.2		July	513,331
	02/09/1999		70	13.8		August	350,706
	02/16/1999		650	11		September	317,830
			210	11.5		October	316,648
	03/25/1999		12	13.3		November	297,238
	04/11/1999		220	11.9		December	372,089
	04/13/1999		220	12.5		January	339,338
	05/10/1999		160	11.1		February	407,056
	05/24/1999		180	14.8		March	631,894
	06/15/1999		600	15.2		April	
	06/25/1999	835	300	15		May	257,678
	07/07/1999	1410	600	15.7		June	535,483
	08/05/1999	1715	160	18.6		July	553,183
	09/07/1999	1110	480	14.3		August	584,539
	09/17/1999	1125	140	14.6			423,537
	10/07/1999	1515	360	13.1		September	611,888
	10/20/1999	1355	100	15.3		October	447,786
	11/09/1999	1455	350	12.8		November	450,322
	12/08/1999	940	400	10.6		December	196,457
	01/12/2000	915	100	11.8		January	60,728
	01/17/2000	1420	200	11.4		February	70,293
	02/10/2000	1205	600	10.8		March	207,409
	02/16/2000	830	600	10.8		April	138,150
	03/07/2000	1509	220	12.7		May	29
	03/17/2000	1005	240			June	0
	04/10/2000	1155	280	10.7		July	0
	04/25/2000	1457	150	11.8		August	0
	05/08/2000	1505	180	15.8		September	0
	05/23/2000	1025		13.2		October	0
	06/08/2000	1505	200	14.5		November	0
	06/13/2000	930	400	14.6		December	0
	07/20/2000		400	14.6			
	07/25/2000	1205	650	14.6			
		1330	480	14.5			
	08/07/2000	155	200	16.6			
	08/14/2000	1135	200	16.5			
	09/15/2000	1415	150	16.8			
	09/20/2000	1215	400	17.9			
	10/16/2000	1530	400	13.7			
	10/23/2000	1320	400	14			
	11/06/2000	1150	460	11.6			
	12/14/2000	1540	300	9.1			
	12/19/2000	1505	280	8.6			
	02/22/2001	1040	400	10.7			
	02/26/2001	1005	520	7.9			
	03/20/2001	1415	300	11.6			
	04/04/2001	1045	360	8.7			
	04/17/2001	850	500	8.3			
	05/08/2001	940	340	10.4			
j	une-Dec-01	NO DISCHAR	GE MINE SE	ALED			

### WILBERG MINE - GRIMES WASH PERMIT # 0022896-001A (WMDO1)

## TMA Discharge to Cottonwood Canyon Creek UPDES 001 Transferred to TMA - June 2001 Quality

Quantity

			Temp.			Quantity
Date	Time	GPM	(°C)	Comments	Month	Gallons/day
12/08/1998	1140	286	7			
01/08/1999	1050	4.6	8		April	176,019
02/10/1999	1430	10	9		May	187,599
03/08/1999	1250	2	9		June	164,732
04/11/1999	1240	309	8		July	213,347
04/13/1999	1020	2.3	9		August	260,349
05/10/1999	1220	309	8		September	231,801
06/15/1999	1405	6.7	12		October	168,774
07/07/1999	1525	349	12		November	89,377
08/05/1999	1650	309	11		December	12,807
09/07/1999	1225	2.1	14		January	36,124
10/07/1999	1435	1.36	14		February	3,138
10/20/1999	1315	300	13		March	16,780
11/09/1999	1540	290	9		April	126,248
12/08/1999	1030	6	7		May	250,725
01/17/2000	1345	1	9		June	282,974
02/10/2000	1140	5	8		July	315,268
03/07/2000	1520	No discharge	0		August	238,266
04/10/2000	1120	5	9		September	136,403
04/25/2000	1427	4.6	13		October	117,768
05/08/2000	1440	7.5	10		November	116,911
06/08/2000	1410	6.67	11		December	87,071
07/20/2000	1120	32	11		January	26,531
08/07/2000	1105	10	12		February	28,024
09/14/2000	950	5.2	12		March	73,252
09/20/2000	1300	8	15		April	138,278
10/16/2000	1455	8	11		May	44,594
11/06/2000	1120	7.5	7		June	0
11/08/2000	1155	6.69	9		July	0
12/14/2000	1625	6.3	6		August	40,320
01/09/2001	1420	8.6	7		September	34,128
02/05/2001	1615	0.3	2		October	34,118
03/20/2001	1355	32	9		November	34,070
04/16/2001	1000	290	10		December	48,960
05/08/2001	910	300	10			
06/01/2001	N	10 DISCHARGE	10			
07/01/2001		10 DISCHARGE				
08/22/2001	936	28	8			
09/18/2001	1600	23.7	8			
10/23/2001	1305	34.11	9			
10/31/2001	942	34.1	9			
11/14/2001	1210	23.66	8			
12/13/2001	1335	34	8			
			U			

### WILBERG MINE - MILLER CANYON PERMIT # 0022896-004A

### Miller Canyon Breakout (MILLER)

	Quality Temp.				Quantity	
Date	Time	GPM	(°C)	Comments	Month	Gallons/day
01/08/1999	1021	Dry			January	No Discharge
02/09/1999	1420	Dry			February	-
03/08/1999	1300	Dry			March	No Discharge
04/11/1999	1248	Dry			April	No Discharge
05/10/1999	1110	Dry			May	No Discharge
06/15/1999	1500	Dry			•	No Discharge
07/22/1999	1455	Dry			June	No Discharge
08/05/1999	1740	Dry			July	No Discharge
09/07/1999	1000	Dry			August	No Discharge
10/07/1999	1435	Dry			September	No Discharge
11/09/1999	1410	Dry			October	No Discharge
12/08/1999	910	Dry			November	No Discharge
01/17/2000	1400	Dry			December	No Discharge
02/10/2000	1239	Dry			January	No Discharge
03/08/2000	1000	Dry			February	No Discharge
04/07/2000	1257	Dry			March	No Discharge
05/08/2000	1405	Dry			April	No Discharge
06/08/2000	1420	Dry			May	No Discharge
07/20/2000	1343	Dry			June	No Discharge
08/07/2000	1221	Dry			July	No Discharge
09/15/2000	1400	Dry			August	No Discharge
10/16/2000	1500	Dry			September	No Discharge
11/06/2000	1210	Dry			October	No Discharge
12/14/2000	1507	•			November	No Discharge
01/09/2001	1350	Dry D=-			December	No Discharge
02/05/2001	1540	Dry			January	No Discharge
03/20/2001	1315	Dry			February	No Discharge
04/04/2001	1100	Dry			March	No Discharge
05/08/2001	1006	Dry			April	No Discharge
06/01/2001	940	Dry			May	No Discharge
07/01/2001	1000	Dry			June	No Discharge
08/01/2001	920	Dry			July	No Discharge
09/01/2001		Dry			August	No Discharge
10/31/2001	1143	Dry			September	No Discharge
11/14/2001	1000	Dry			October	No Discharge
	1140	Dry			November	No Discharge
12/13/2001	1300	Dry			December	No Discharge

### DEER CREEK IN-MINE QUALTIY & LONG TERM FLOW

_		QUALITY					RM FLOW PM)
Date	Location	Time	Temp. (°C)	GPM	Date	Site #1	Site #2
06/22/1998	MAIN NMAIN E.	1015	0.1	0.10			
06/22/1998	TW-10	950	8.1	0.13	03/29/1999	0.1	3.75
06/24/1998	5th North XC-14	1000	7.5	5	06/25/1999	0.13	4
09/23/1998	TW-10	1215	10.2	0.5	09/29/1999	0.11	4.62
09/23/1998	MAIN NMAIN E.	1215	6	5	12/13/1999	0.19	3.5
12/22/1998	TW-10	835	7.5	0.15	03/30/2000	0.22	2.75
12/22/1998	MAIN NMAIN E.	410	7.5	4.3	06/28/2000	0.11	3.6
03/29/1999	TW-10	930	6	0.15	10/03/2000	0.11	3.6
03/29/1999	MAIN NMAIN E.		7.5	3.75	12/18/2000	0.11	2.9
06/25/1999	TW-10	1000	6.2	0.1	03/28/2001	0.12	2.4
06/25/1999	MAIN NMAIN E.	810	7.1	4	09/26/2001	0.1	3.5
09/29/1999	TW-10	830	7.7	0.13	12/17/2001	0.1	3.3
09/29/1999	MAIN NMAIN E.	1000	7.1	4.62			
12/13/1999	TW-10	1035	7.4	0.11			
12/13/1999	MAIN NMAIN E.	930	6	3.5			
03/30/2000	TW-10	1100	6	0.19			
03/30/2000		1300	6.9	2.75			
06/28/2000	MAIN NMAIN E.	1330	5.1	0.22			
06/28/2000	TW-10	1420	6	3.6			
10/03/2000	MAIN NMAIN E.	1445	7	0.11			
	TW-10	1010	7.2	3.6			
10/03/2000	MAIN NMAIN E.	1030	8.1	0.11			
12/18/2000	TW-10	1430	7.1	2.9			
12/18/2000	MAIN NMAIN E.	1415	6.4	0.11			
03/28/2001	TW-10	1250	7.3	2.4			
03/28/2001	MAIN NMAIN E.	1315	5	0.12			
*	Samples Collected on 6	/18/2001, los	st in transit, no re	cord at lab			
09/26/2001	TW-10	1313	7.4	3.5			
09/26/2001	MAIN NMAIN E.	1335	8.3	0.1			
12/17/2001	TW-10	1015	7.5	3.3			
12/17/2001	MAIN NMAIN E.	1030	6.5	0.1			

### TRAIL MOUNTAIN IN-MINE QUALTIY & LONG TERM FLOW

Da4-	<b>T</b>	QUALITY				LONG TE	RM FLOW PM)
Date	Location	Time	Temp. (oC)	GPM	Date	UG-2	UG-3
09/25/1996	UG-3	1530	11.3	5.0	09/28/1998	*	2.00
12/03/1996	UG-3	1415	11.5	5.0	·	*	7.00
03/11/1997	UG-3	1410	14	5.0	12/08/1998		6.00
06/26/1997	UG-3	1140	10	1	03/31/1999	*	7.00
09/24/1997	UG-3	1040	12	7.0	06/21/1999	*	2.00
12/22/1997	UG-3	1135		6.0	10/22/1999	*	7.00
03/25/1998	UG-3	820	4.1	8.6	12/08/1999	*	5.00
06/12/1998	UG-3	1030	6.1	7.0	03/20/2000	*	7.00
09/28/1998	UG-3	1200	10.5	7.0	06/16/2000	*	5.00
12/08/1998	UG-3	1330	10.3	7.0	10/03/2000	*	7.00
03/31/1999	UG-3		4.5	6.0	12/13/2000	*	6.00
06/21/1999	UG-3	1040	5.7	7.0	03/08/2001	*	2.60
10/22/1999	UG-3	1420	11.6	2.0			
12/08/1999		815	12.1	7.0			
	UG-3	1320	5.6	5.0			
03/20/2000	UG-3	1250	5.8	7.0			
06/16/2000	UG-3	1200	12.6	5.0			
10/03/2000	UG-3	1030	12.4	7.0			
12/13/2000	UG-3	914	4.7	6.0			
03/08/2001	UG-3	1046	5.1	2.6			
06/01/2001		MINE SEALED					

<sup>\*</sup> UG-2 Monitoring Discontinued, insufficient flow

### WILBERG-COTTONWOOD IN-MINE QUALTIY & LONG TERM FLOW

		QUALITY					RM FLOW
Date	14:					( <b>G</b> )	PM)
	Location	Time	Temp. (°C)	GPM	Date	Site #1	Site #2
06/26/1997	TMA @ 22						
09/24/1997	TMA @ 32	1305	12	2.00	12/08/1998	< 0.1	1.30
09/24/1997	2nd S XC-11		14.3	0.01	03/31/1999	< 0.1	1.00
12/22/1997	TMA @ 32	1010	12.3	2.00	06/21/1999	< 0.1	2.50
12/22/1997	2nd S XC-11		6.7	0.01	10/22/1999	< 0.1	2.00
	TMA @ 32	1210	13.7	2.50	12/08/1999	< 0.1	2.50
03/25/1998	2nd S XC-11		6.9	< 0.1	03/20/2000	< 0.1	2.00
03/25/1998	TMA @ 32	810	13.5	3.00	06/16/2000	< 0.1	2.00
06/12/1998	2nd S XC-11		8.6	< 0.1	10/03/2000	< 0.1	2.00
06/12/1998	TMA @ 32	1200	14	5.00	12/13/2000	<0.1	2.70
09/28/1998	2nd S XC-11	1414	8	< 0.1	03/08/2001	0.01	2.30
09/28/1998	TMA @ 32	1300	13.8	5.00			2.50
12/08/1998	2nd S XC-11	1400	6.7	< 0.1			
12/08/1998	TMA @ 32	1400	12.5	1.30			
03/31/1999	2nd S XC-11	1420	6.2	< 0.1			
03/31/1999	TMA @ 32	1410	13.8	1.00			
06/21/1999	2nd S XC-11	1330	9	< 0.1			
06/21/1999	TMA @ 32	1400	12.2	2.50			
10/22/1999	2nd S XC-11	720	10.6	<0.1			
10/22/1999	TMA @ 32	800	14.1	2.00			
12/08/1999	2nd S XC-11	1240	10	<0.1			
12/08/1999	TMA @ 32	1310	14.2	2.50			
03/20/2000	2nd S XC-11	1300	7.1	<0.1			
03/20/2000	TMA @ 32	1305	14.4	2.00			
06/16/2000	2nd S XC-11	1110	10	<0.1			
06/16/2000	TMA @ 32	1135	14.1	2.00			
10/03/2000	2nd S XC-11	1120	11.5	<0.1	-		
10/03/2000	TMA @ 32	1100	14.8	2.00			
12/13/2000	2nd S XC-11	950	7.8	0.06			
12/13/2000	TMA @ 32	935	13	2.70			
03/08/2001	2nd S XC-11	1200	8.3	0.01			
03/08/2001	TMA @ 32	1117	13				
06/10/2001	•		ED ON MAY 10	2.30	ı		
		DEAL	CO ON MIAY I	J, ∠UU I			

### **Sediment Pond Analysis**

### Cottonwood Canyon Creek Permit # 0022896-002A

Date	Time	GPM	Temp. (°C)	Weather	Comments	
JanDec., 1986		no disales				
		no discharge				
JanDec., 1987		no discharge				
JanDec., 1988		no discharge				
JanDec., 1989		no discharge				
JanDec., 1990		no discharge				
JanDec., 1991		no discharge				
JanDec., 1992		no discharge				
JanDec., 1993		no discharge				
JanDec., 1994		no discharge				
JanDec., 1995		no discharge				
JanDec., 1996		no discharge				
JanDec.,1997		no discharge				
JanDec.,1998		no discharge				
JanDec.,1999		no discharge				
Jan-Dec.,2000		no discharge				
Jan-June.,2001		no discharge				
Jan-Dec.,2001		no discharge				

### **Sediment Pond Analysis**

### Deer Creek Permit # 0023604-001

Date	Time	GPM	Temp. (°C)	Weather	Comments
01/06/1999	1420	2	5	clear 30's	
02/09/1999	1325	17	1		Prec-Event snow melt
03/08/1999	1005	20	2	pc 30's	rec-Event show men
04/11/1999	1050	59	3	clear40's	
04/13/1999	910	54	2	pc40's	No lab samples taken
05/10/1999	925	79	5	pc40's	110 lab samples taken
06/15/1999	1055	85	11	sunny70's	
07/08/1999	1000	38	14	sunny70's	
08/05/1999	1530	50	14	cloudy70's	
09/07/1999	1600	63	11	sunny80's	
10/07/1999	1035	79	5	sunny40's	
10/20/1999	1444	74	8	clear50's	split with state health
11/09/1999	1335	79	2	sunny50's	•
12/07/1999	1425	45	1	cloudy30's	Prec-Event snow
01/24/2000	940	20		cloudy30's	
01/25/2000	1415	15	3	cloudy30's	
02/28/2000		131		ptcloudy30's	
03/07/2000	1347	54	2	sunny40's	
04/05/2000	1355	104		ptcloudy50's	
04/10/2000	1025	125		clear50's	
04/25/2000	1312	79	11	sunny60's	DEQ Water Quality
05/08/2000	1150	54	8	ptcloudy60's	
06/08/2000	1120	54	11	sunny80's	
06/27/2000	1012	25		clear80's	
08/07/2000	930	6		sunny80's	
09/07/2000	1005	20		ptcloudy80's	
09/20/2000	945	38		sunny 70's	
10/16/2000	1015	63	4	clear30's	
11/06/2000 11/08/2000	945	74		ptcloudy30's	
12/14/2000	1017	74			State sampling
01/09/2001	1410 1005	45		cloudy20's	
02/05/2001	1445	32		cloudy30's	
03/20/2001	1150	38		sunny30's	
04/12/2001	1300	54 70		sunny50's	
04/25/2001	920	79 85		cloudy40's	
05/08/2001	1400	50		ptcloudy40's	
06/18/2001	1410	74		sunny 70's	
06/27/2001	908	74 79		sunny80's	0
07/26/2001	1425	79 54			State sampling
08/22/2001	818	45		sunny80's	0
10/23/2001	845	50		-	State sampling
10/31/2001	820	50		cloudy60's	Cana a supplier
11/13/2001	1545	153		cloudy60's clear30's	State sampling
12/13/2001	1514	17		clear30's	
·		1,	1	CICATZU S	

### **Sediment Pond Analysis**

### Des-Bee-Dove Permit # 0023591-001

Date	Time	GPM	Temp. (°C)	Weather	Comments
AprJun.97 07/14/1997	1020 1150	no discharge 5.0	21	pc40's clear80's	Opened valve to december and
Áugust 1998	1430	no discharge	21	cical 60 S	Opened valve to decant pond.
09/18/1997 Oct Dec 98	1030 830	40.0 no discharge	17	clear50's	Opened valve to decant pond.
Jan Apr. 99 March-June 99	1400 1020	no discharge no discharge			
Jul-Aug 99 09/07/1999	1420	no discharge			
OctDec 99	1445 1020	15.0 no discharge	17	sunny80's	
Jan-Dec.,00 Jan-Sept.,2001		no discharge no discharge			
10/31/2001	916	26.0	10		Decanted pond
11/14/2001 12/13/2001	1115 1409	25.0 15.0	8 -1		Decanted pond Decanted pond
			- 1		Decamed pond

### **Sediment Pond Analysis**

### Wilberg Mine Permit # 0022896-003A

Date	Time	GPM	Temp. (°C)	Weather	Comments
08/10/1998	1105	31	4	cloudy80's	
09/09/1998	1400	53	14	clear80's	
09/17/1998	1225	17	14	sunny80's	
10/09/1998	1200	14	8	sunny60's	
10/28/1998	930	83	6	sunny50's	Split with State Health
11/05/1998	1205	24	3	clear40's	Spirit with State Health
12/08/1998	1030	22	-1	pc20's	
12/15/1998	1640	24	3	pc30's	Split with State Health
01/08/1999	1025	37	0	clear 30's	
02/09/1999	1420	25	3		Pric-Event snow melt
03/08/1999	1230	35	2	pc 30's	and an end show more
04/11/1999	1220	25	3	clear40's	
04/13/1999	1005	30	5	pc40's	No lab samples taken
05/10/1999	1155	16	5	pc30's	
06/15/1999	1335	19	12	pc80's	
07/07/1999	1510	10	17	cloudy60's	
08/05/1999	1635	10	14	cloudy70's	
09/07/1999	1200	36	10	sunny80's	
10/07/1999	1420	30	8	sunny60's	
10/20/1999	1330	32	8	clear50's	Split with State Health
11/09/1999	1530	33	3	sunny50's	- For the court of
12/08/1999	1015	29	0	sunny20's	
01/25/2000	1531	15	5	-	Split with State Health
02/10/2000	1050	20			Prec-Event snow/rain
03/07/2000	1440	20		sunny40's	Est.Flow meter broken
04/10/2000	1110	15		•	Est.Flow meter broken
04/25/2000	1417	15		sunny50's	Est.Flow meter broken
05/08/2000	1425	15		•	Est.Flow meter broken
06/08/2000	1350	14		cloudy80's	
07/20/2000	1135	11		sunny80's	
08/07/2000	1050	10		sunny80's	
09/14/2000	920	11		sunny80's	
09/20/2000	1245	10		sunny80's	
10/16/2000	1445	14		clear60's	
11/06/2000	1105	8		ptcloudy30's	
11/08/2000	1143	8		_	state sampling
12/19/2000	1410	48		ptcloudy20;s	
01/09/2001	1405	25		cloudy30's	
02/05/2001	1610	25		sunny30's	
03/20/2001	1325	19		sunny50's	
April-Dec,2001		No Discharge		- ···	

### **Sediment Pond Analysis**

### Trail Mountain Mine Permit # UTG040003-001

Date	Time	GPM	Temp. (°C)	Weather	Comments
01/22/1009	1120				
01/23/1998	1139	20	5	clear30's	Prec. Event <10y/24HSnow melting
02/17/1998	1200	50	1.8	cloudy30's	Prec. Event <10y/24HSnow melting
03/04/1998	1230	40	4.6	clear30's	Prec. Event <10y/24HSnow melting
04/13/1998	1025	5	3.4	snow30's	Prec. Event <10y/24H
05/11/1998	1530	60	8.2	pc50's	Discharge Duration 1 Day
06/04/1998	1420	no discharge		cloudy50's	
07/01/1998		no discharge			No discharge 7/1/98-7/31/98
08/01/1998		no discharge			No discharge 8/1/98-8/31/98
09/02/1998	1515	37.5	14.8		Prec. Event
10/09/1998	1125	1.76	8.2	sunny60's	
10/28/1998	1025	30	5.6	sunny50's	Split with state health
11/10/1998	1020	120	11.6	sunny30's	Prec.Event <10y24H
12/08/1998		no discharge			
01/08/1999	1000	1.5	-0.6	clear 20's	
02/17/1999	1135	10	0	pc 40's	Prec-Event snow melt
03/08/1999		No Discharge		pc 30's	
04/11/1999	1405	13	4.4	clear40's	
05/10/1999	1125	0.67	2.2	cloudy30's	
06/15/1999		No Discharge		pc80's	
07/07/1999	1445	12	16.8	cloudy60's	Prec-Event rain
08/05/1999	1730	12	15.4	cloudy70's	
09/07/1999	1055	7.5	12.9	sunny70's	
10/07/1999	1505	2.4	9.2	sunny60's	
11/09/1999		No Discharge		sunny50's	
12/08/1999		No Discharge		sunny20's	
01/12/2000		No Discharge		ptcloudy30's	
02/10/2000		No Discharge		cloudy30's	Prec-Event snow / rain
03/07/2000		No Discharge		sunny40's	
April-Sept.2000		No Discharge		sunny80's	
10/31/2000	1430	100	2.5	cloudy30's	Prec-Event snow
Nov-Dec.2000		No Discharge	_ · •		
Jan-Dec.2001		No Discharge			
		3-		•	

	ST DEV	0.97	0.79	0.69	1.00	0.95	0.76	0.98	0.65	0.37	0.77	1.03	0.99	2.45
	MAX	3.27	2.90	2.42	4.10	3.34	2.77	3.75	2.29	1.21	2.49	4.83	3.46	19.71
	MEAN	1.28	1.06	0.82	1.16	1.31	1.44	1.06	0.94	0.53	1.00	1.43	1.50	13.39
	NIM	0.04	0.05	0.00	0.27	0.00	0.00	00.0	0.22	0.04	0.03	0.12	90.0	10.16
	2001	3.48	0.62	0.39	1.96	1.21	1.03	1.12	1.39	0.19	0.58	1.09	0.12	13.17
	2000	0.04	0.05	0.28	0.48	3.27	1.56	0.15	0.72	0.59	0.03	2.03	96.0	10.16
	1999	3.01	1.08	0.00	0.75	0.34	0.07	2.82	0.36	1.21	2.08	2.24	0.78	14.73
	1998	0.24	0.84	0.23	0.97	3.34	0.71	0.81	0.37	0.04	0.78	0.57	2.16	11.05
***	1997	1.50	1.63	1.66	2.49	1.56	00.0	0.40	0.91	0.15	0.15	1.30	2.43	11.75
	1996	0.18	0.46	0.64	1.39	1.18	2.23	0.21	1.14	0.30	0.58	0.35	3.46	12.12
<b>⊵</b> 8	1995	1.86	1.42	0.65	1.37	99.0	0.79	3.75	2.29	1.19	0.34	1.52	0.62	16.46
ENERGY WEST MINING COMPANY FAST MOUNTAIN PRECEPTEATION HISTORICAL COMPANISOR	1994	2.23	1.12	0.14	0.32	1.35	0.34	2.65	0.36	0.39	0.10	0.83	1.49	11.33
	1993	1.57	0.57	1.53	4.10	2.34	2.01	0.33	0.72	0.19	0.04	0.82	0.14	14.37
WEST CONTAIN PORICAL	1992	0.49	1.07	0.07	0.61	1.73	2.39	95.0	2.19	0.95	0.85	0.48	0.35	11.74
ENERGY WEST M EAST MOUNTAIN BISTORICAL	1991	0.48	0.26	99.0	0.34	0.39	2.34	0.59	1.83	0.21	1.01	1.48	3.11	12.69
	1990	0.28	0.39	0.16	0.74	2.08	1.75	1.03	0.26	0.67	0.88	1.03	1.62	10.90
	1989	0.61	0.43	1.56	9	99.0	1.03	0.26	0.47	0.43	1.19	2.44	0.49	10.59
	1988	2.77	1.91	1.29	1.42	0.00	66.0	2.08	1.03	0.81	0.45	96.0	0.91	14.62
	1987	1.57	0.39	0.16	1.37	1.37	1.65	1.16	1.77	0.58	2.49	1.16	90.0	13.73
v 35	1986	1.15	2.38	0.87	0.30	2.10	1.43	1.05	0.38	0.53	0.87	2.24	1.63	14.92
	1985	3.27	0.97	1.67	0.49	0.59	1.77	1.35	1.73	0.28	2.47	0.12	2.31	17.02
	1984	0.76	2.43	2.42	0.27	0.65	1.22	0.50	0.22	1.18	1.90	2.33	0.64	14.53
	1983	0.38	2.90	1.39	1.30	1.81	1.98	0.92	0.71	0.61	1.27	4.83	1.62	19.71
3	1982	1.93	0.53	0.97	3.22	0.14	1.67	0.00	0.45	60.0	1.86	1.10	2.61	14.57
	1981	1.28	0.39	0.05	0.29	0.52	2.77	0.64	0.87	0.11	0.57	0.85	2.55	10.90
	MONTH	OCT	NOV	DEC	NAC	FEB	MAR	APR	MAY	N N	JOC	AUG	SEP	TOTAL

EAST MO PRECIPI 2001 WAT	TATION
MONTH	INCHES
Oct-00	3.48
Nov-00	0.62
Dec-00	0.39
Jan-01	1.96
Feb-01	1.21
Mar-01	1.03
Apr-01	1.12
May-01	1.39
Jun-01	0.19
Jul-01	0.58
Aug-01	1.09
Sep-01	0.12
TOTAL	13.17

ENERGY WEST MINING COMP	VIARC
FIREING LATER I MINIMING COMIL	- I PIA:
<b></b>	
EAST MOUNTAIN WEATHER ST	'A TION
THE MODITIVING MENTILLY 21	A HOR
0004 1414	
2001 WATER VEAR	

j		ZUUT WAT	ER TEAK			
	DATE	TIME	PRECIP	ITATION		
	10/10/00	7:24 AM	Start		•	
	10/10/00	6:58 PM	Stop	1.09		
	10/11/00	3:54 AM	Start			
	10/11/00	12:44 PM	Stop	0.24		
	10/20/00	8:48 PM	Start			
	10/21/00	2:15 PM	Stop	0.01		
	10/21/00	2:15 PM	Start			
	10/21/00	5:11 PM	Stop	0.13		
	10/22/00	3:27 AM	Start			
	10/24/00	4:34 AM	Stop	0.70		
	10/24/00	1:25 PM	Start			
	10/24/00	9:59 PM	Stop	0.06		
	10/26/00	11:09 PM	Start			
	10/29/00	2:14 AM	Stop	0.56		
	10/30/00	3:02 AM	Start			
	10/31/00	4:38 PM	Stop	0.69		
	10/31/00	4:38 PM	Start		3.48	Inches Oct-00
	11/01/00	12:00 AM	Stop	0.32		
	11/01/00	12:00 AM	Start			
	11/01/00	8:24 AM	Stop	0.01		
	11/08/00	9:57 PM	Start			
	11/09/00	12:48 AM	Stop	0.06		
	11/09/00	1:36 PM	Start			
	11/10/00	1:51 AM	Stop	0.14		
	11/11/00	12:17 PM	Start			
	11/11/00	1:20 PM	Stop	0.08	0.62	Inches Nov-00
	12/10/00	6:46 PM	Start			
	12/11/00	1:09 AM	Stop	0.08		
	12/15/00	5:12 AM	Start			
	12/15/00	2:34 PM	Stop	0.30	0.39	Inches Dec-00
	01/11/01	6:42 AM	Start			
	01/13/01	3:03 AM	Stop	0.91		
	01/16/01	11:16 AM	Start			
	01/16/01	12:54 PM	Stop	0.05		
	01/17/01	10:54 AM	Start			
	01/17/01	2:16 PM	Stop	0.10		
	01/20/01	5:36 AM	Start			
	01/20/01	8:31 AM	Stop	0.05		
	01/24/01	3:20 PM	Start			
	01/25/01	5:20 PM	Stop	0.22		
	01/27/01	2:47 AM	Start			
	01/27/01	1:13 PM	Stop	0.26		

	GY WEST MI				
LACTI	2001 WAT				
DATE	TIME		PITATION	-	
01/28/01	11:32 AM	Start	PHATION	1	
01/28/01	1:45 PM	Stop	0.10		
01/29/01	10:01 AM	Start	0.18		
01/29/01	12:53 PM	Stop	0.14		
01/30/01	4:19 AM	Start	0.14		
01/30/01	7:14 AM	Stop	0.07	1.00	Imphae Iso 04
0 17 0 0 1 0 1	7.1474	Otop	0.07	1.96	Inches Jan-01
02/22/01	8:36 PM	Start			
02/23/01	1:15 AM	Stop	0.28		
02/23/01	10:43 AM	Start			
02/24/01	3:26 AM	Stop	0.28		
02/26/01	5:25 PM	Start			
02/26/01	6:16 PM	Stop	0.07		
02/27/01	10:35 AM	Start			
02/28/01	6:02 AM	Stop	0.13		
02/28/01	8:49 AM	Start			
02/28/01	8:23 PM	Stop	0.45	1.21	Inches Feb-01
03/02/01	10:33 PM	Start			
03/03/01	4:55 AM	Stop	0.14		
03/07/01	5:39 PM	Start			
03/07/01	5:32 PM	Stop	0.07		
03/09/01	11:21 PM	Start			
03/11/01	12:24 AM	Stop	0.72		
03/23/01	6:53 PM	Start			
03/24/01	11:43 AM	Stop	0.10	1.03	Inches Mar-01
0.4/0=/0.4					
04/07/01	9:24 AM	Start			
04/08/01	1:40 AM	Stop	0.34		
04/09/01	7:23 PM	Start			
04/10/01	9:46 AM	Stop	0.37		
04/10/01	2:43 PM	Start			
04/10/01	7:21 PM	Stop	0.10		
04/20/01	10:42 PM	Start			
04/22/01	5:09 PM	Stop	0.31	1.12	Inches Apr-01
05/02/01	6:51 PM	Start			
05/02/01	8:52 PM	Stop	0.77		
05/04/01	3:46 AM	Start	0.77		
05/05/01	5:40 AW 5:24 PM	Stop	0.20		
05/05/01	9:40 PM	Start	0.30		
05/17/01	4:31 PM		0.22	1 00	landa se a:
30/17/01	7.51 F W	Stop	0.33	1.39	Inches May-01
06/24/01	8:27 AM	Start			
06/24/01	10:15 AM	Stop	0.07		
30,27,01	. O. TO AIVI	Clop	0.07		

	SY WEST MI				
EASIM	OUNTAIN W 2001 WATI		STATION		
DATE	TIME		ITATION		
06/26/01	5:18 AM	Start	HATION		
06/26/01	10:28 PM	Stop	0.12	0.19	Inches Jun-01
		отор	0.12	0.19	mones Jun-01
07/08/01	6:38 PM	Start			
07/08/01	8:15 PM	Stop	0.20		
07/10/01	11:11 AM	Start	0.20		
07/10/01	12:24 PM	Stop	0.07		
07/14/01	6:05 PM	Start			
07/15/01	3:10 PM	Stop	0.31	0.58	Inches Jul-01
08/07/01	2:58 PM	Start			
08/07/01	3:55 PM	Stop	0.04		
586	0.51005	Start			
08/08/01	4:35 PM	Stop	0.08		
08/09/01	3:08 PM	Start			
08/09/01	6:25 PM	Stop	0.11		
08/13/01	12:49 PM	Start			
08/14/01	1:17 PM	Stop	0.86		
08/29/01	3:39 PM	Start			
08/29/01	5:16 PM	Stop	0.09	1.09	Inches Aug-01
					-
09/13/01	4:55 AM	Start			
09/13/01	6:25 AM	Stop	0.06		
09/16/01	10:46 AM	Start			
09/16/01	6:12 PM	Stop	0.07	0.12	Inches Sep-01

13.17 TOTAL

# EAST MOUNTAIN TEMPERATURES - HISTORICAL SUMMARY

SUMMARY	MOT	32.0	54.9	4.3
OCTORER	HGH	48.2	71.8	11.6
		AVG.	MAX	N N N

MAX
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•		
	JONE	SUMMARY
	HOH	LOW
AVG.	67.4	45.0
MAX.	6.06	74.1
NIW.	27.7	13.1

	NOVEMBER	SUMMARY
	HIGH	MOT
AVG.	35.6	22.1
MAX.	58.8	44.0
Z N	9.0	4.8

		AVG.	MAX	Σ	-
MARCH	HBH	39.0	64.6	7.4	
SUMMARY	MOT	20.9	47.3	9.9-	

S	мол нен	74.3		48.5
		AVG	MAX.	Z

	DECEMBER	SUMMARY
	HIGH	MOT
AVG.	28.7	14.5
MAX	55.9	41.8
Σ	-2.6	-17.6

	APRIL	SUMMARY
	HBH	MOT
AVG.	46.2	26.9
MAX	74.8	51.9
ΣIΣ	12.7	-0.3

	TOLICIA	CHAMADY
	10000	COMMISSION
	HBH	LOW
AVG.	72.3	52.3
MAX	94.7	70.5
Σ	35.8	31.8

HIGH LOW AVG. 29.1 15.2 MAX. 54.0 34.9 MIN. 2.0 -15.2		JANUARY	SUMMARY
29.1 54.0 2.0		HGH	MOT
54.0	AVG.	29.1	15.2
2.0	MAX.	54.0	34.9
	Z	2.0	-15.2

SUMMARY	LOW	34.8	62.7	1.8
MAY	HIGH	54.9	83.8	15.8
<b>L</b>		AVG.	MAX.	Z Z Z

	SEPTEMBER	SUMMARY
	HGH	MOT
AVG.	62.6	43.3
MAX.	85.6	65.0
MIN.	31.6	20.0

DATE  NA  08-Aug-96  NA  22-Dec-91  NA  NA  NA  NA  NA  NA  NA  NA	HISTORICAL SUMMARY	SUMMARY	
NA 08-Aug-96 NA 22-Dec-91 NA NA NA NA NA NA	PARAMETER	DATE	TEMP
08-Aug-96 NA 22-Dec-91 NA NA NA NA NA NA NA NA	AVERAGE HIGH	ΑN	49.3
NA 22-Dec-91 NA NA NA NA NA	MAXIMUM HIGH	08-Aug-96	94.7
22-Dec-91 NA NA 28-Jun-93 NA NA	AVG. MAX. HIGH	ΑN	73.6
NA NA 28-Jun-93 NA NA	MINIMUM HIGH	22-Dec-91	-2.6
NA 28-Jun-93 NA 22-Dec-90	AVG MIN HIGH	ΑN	16.4
28-Jun-93 NA 22-Dec-90	AVERAGE LOW	ΑN	31.4
22-Dec-90	MAXIMUM LOW	28-Jun-93	74.1
22-Dec-90	AVG. MAX. LOW	ΑN	54.7
ΑΝ	MINIMUM LOW	22-Dec-90	-17.6
	AVG. MIN. LOW	ΝA	2.7

# EAST MOUNTAIN TEMPERATURES- 2001 WATER YEAR

•		
	00-120	SUMMAR
	HOIH	MOT
AVG.	20.3	37.2
MAX.	217	54.4
MIN.	33.1	26.3

SUMMARY	row	37.2	54.4	26.3	SUMMARY	LOW	18.9	31.5	2,0
0et-00	HGH	50.3	71.7	33.1	Nov-00	HIGH	31.9	44.3	17.3

MMARY	LOW	0.9	17.9	-9.4	SUMMARY	LOW	15.2	25.5	1.3
	HIGH	20.3	32.3	5.3	Mar-01 SU	HIGH	29.2	40.9	13.1
		AVG.	MAX.	MIN			AVG.	MAX.	MIN.

SUMMARY	row	39.2	9.09	15.6		SUMMARY	MOT	47.4	6.09	38.6
Jun-01	H9IH	61.1	74.3	34.2		Jul-01	HBH	8.89	81.4	54.7
		AVG.	MAX.	MIN				AVG.	MAX.	NIN.
					-					

SUMMARY	MOT	9.3	20.2	-5.1
Dec-00	HIGH	21.8	31.9	8.8
		AVG.	MAX.	Ä.

AVG.	Jan-01 HIGH 18.6 38.4	SUMMARY LOW 7.4 25.6
WIN	6.5	-3.4

ı	V					1 1					Г
	SUMMARY	MOT	19.3	33.0	1.2		SUMMARY	MOT	31.7	43.7	
	Apr-01	HSIH	37.1	55.4	17.3		May-01	HIGH	50.2	66.5	
			AVG.	MAX.	WIN				AVG.	MAX.	

SUMMARY	LOW	48.2	70.2	35.6	
Aug-01	HOH	9.69	71.3	35.8	
		AVG.	MAX.	MIN.	

154		_	_	_
SUMMARY	NOT	40.0	47.8	21.2
Sep-01	HGH	62.2	69.1	45.6
		AVG.	MAX.	MIN.

	TEMP	42.5	81.4	5.3	26.6	70.2	-9.4
21 SUMMARY	DATE	V/N#	07/04/01	02/09/01	V/N#	08/27/01	02/09/01
2001	PARAMETER	AVG. HIGH	MAX. HIGH	MIN. HIGH	AVG. LOW	MAX. LOW	MIN. LOW

### 5. EDIT DATABASE AS NEEDED

ENERGY WEST MINING COMPANY								
EAS	ST MOUNTA			ION				
		WATER Y						
DATE	TIME	HIGH	LOW					
10/01/00	6:30 AM	67.6	_	High				
10/01/00	4:09 PM		54.4	Low				
10/02/00	12:14 AM		52.2	Low				
10/02/00	12:11 PM	71.7		High				
10/03/00	11:24 AM	67.6		High				
10/03/00	9:47 PM		49.5	Low				
10/04/00	11:08 AM	64.7		High				
10/04/00	10:57 PM		44.5	Low				
10/05/00	4:13 AM		40.5	Low				
10/05/00	10:34 AM	63.1		High				
10/06/00	5:04 AM		43.0	Low				
10/06/00	12:06 PM	65.8		High				
10/07/00	10:55 AM	65.9		High				
10/07/00	9:53 PM		45.5	Low				
10/08/00	10:47 AM	61.6		High				
10/08/00	9:51 PM	_	43.2	Low				
10/09/00	9:32 AM	59.2		High				
10/09/00	10:25 PM		43.1	Low				
10/10/00	2:19 AM	41.3		High				
10/10/00	10:17 PM		33.2	Low				
10/11/00	10:12 AM	46.1		High				
10/11/00	10:41 PM		30.3	Low				
10/12/00	8:46 AM	39.0		High				
10/12/00	10:36 PM		28.5	Low				
10/13/00	8:56 AM	43.3		High				
10/13/00	10:39 PM		30.3	Low				
10/14/00	3:26 AM		29.2	Low				
10/14/00	9:32 AM	48.1		High				
10/15/00	9:35 AM	49.4		High				
10/15/00	9:36 PM		33.3	Low				
10/16/00	3:19 AM		34.0	Low				
10/16/00	10:23 AM	52.7		High				
10/17/00	10:56 AM	56.4		High				
10/17/00	11:25 PM		40.6	Low				
10/18/00	5:27 AM		39.6	Low				
10/18/00	10:40 AM	55.4		High				
10/19/00	10:52 AM	59.7		High				
10/19/00	11:24 PM		43.7	Low				
10/20/00	11:26 AM	59.7		High				
10/20/00	8:02 PM		44.0	Low				
10/21/00	7:08 AM	47.6		High				

ENERGY WEST MINING COMPANY
EAST MOUNTAIN WEATHER STATION
TYO I MICON I WIN MENTUEK 2 I VION
2001 WATER YEAR

	2001	<b>WATER Y</b>	<b>EAR</b>	
DATE	TIME	HIGH	LOW	
10/21/00	9:33 PM		34.2	Low
10/22/00	2:55 AM		35.2	Low
10/22/00	5:11 AM	37.5		High
10/23/00	4:41 AM	41.4		High
10/23/00	8:43 PM		34.2	Low
10/24/00	7:48 AM	41.8		High
10/24/00	7:51 PM		29.1	Low
10/25/00	4:03 AM	36.2		High
10/25/00	10:16 PM		33.4	Low
10/26/00	5:42 AM	35.7		High
10/26/00	8:41 PM		35.0	Low
10/27/00	4:37 AM	40.0		High
10/27/00	8:35 PM		34.3	Low
10/28/00	4:44 AM	39.2		High
10/28/00	9:09 PM		29.2	Low
10/29/00	1:49 AM	36.2		High
10/29/00	9:35 PM		31.7	Low
10/30/00	3:58 AM	33.8		High
10/30/00	9:56 PM		27.7	Low
10/31/00	4:22 AM	33.1		High
10/31/00	12:32 PM		26.3	Low
11/01/00	6:47 AM	28.0		High
11/01/00	9:24 PM		21.0	Low
11/02/00	5:13 AM		19.5	Low
11/02/00	1:43 PM	34.9	,	High
11/03/00	6:55 AM		17.6	Low

	Oct-00 SUMMAR	
	HIGH	LOW
AVG.	50.3	37.2
MAX.	71.7	54.4
MIN.	33.1	26.3

11/03/00	12:01 PM	35.7		High
11/04/00	7:47 AM		25.8	Low
11/04/00	12:27 PM	41.1		High
11/05/00	2:02 AM	30.1		High
11/05/00	11:10 PM		18.7	Low
11/06/00	2:21 PM	26.9		High
11/06/00	10:54 PM		15.2	Low
11/07/00	8:42 AM		11.1	Low
11/07/00	1:28 PM	27.1		High
11/08/00	7:10 AM		17.2	Low
11/08/00	12:24 PM	31.4		High
11/09/00	10:04 AM	28.8		High
11/09/00	8:22 PM		20.7	Low
11/10/00	10:20 AM	27.3		High
11/10/00	11:30 PM		12.3	Low
11/11/00	10:43 AM	28.1		High
11/11/00	11:31 PM		12.1	Low
11/12/00	11:04 AM	17.3		High
11/12/00	8:42 PM		7.9	Low
11/13/00	7:28 AM		5.8	Low

		WATER Y	/EAR	
DATE	TIME	HIGH	LOW	
11/13/00	11:20 AM	22.3		High
11/14/00	7:39 AM		10.0	Low
11/14/00	1:12 PM	21.6		High
11/15/00	8:53 AM	19.3		High
11/15/00	11:53 PM		10.9	Low
11/16/00	10:43 AM	21.9		High
11/16/00	10:19 PM		8.3	Low
11/17/00	11:37 AM	22.1		High
11/17/00	8:06 PM		9.9	Low
11/18/00	3:02 AM		12.2	Low
11/18/00	10:36 AM	32.5		High
11/19/00	6:54 AM		23.2	Low
11/19/00	11:31 AM	41.5		High
11/20/00	12:29 PM	37.4		High
11/20/00	9:46 PM		26.1	Low
11/21/00	12:06 PM	37.4		High
11/21/00	9:00 PM		25.6	Low
11/22/00	7:33 AM		23.7	Low
11/22/00	11:38 AM	36.4		High
11/23/00	12:20 PM	44.3		High
11/23/00	8:30 PM		29.6	Low
11/24/00	11:28 AM	38.2		High
11/24/00	7:29 PM		23.7	Low
11/25/00	8:08 AM		20.4	Low
11/25/00	12:13 PM	34.3		High
11/26/00	11:55 AM	39.7		High
11/26/00	7:31 PM		29.0	Low
11/27/00	11:21 AM	38.4		High
11/27/00	6:45 PM		31.5	Low
11/28/00	9:51 AM	38.4		High
11/28/00	6:25 PM		27.5	Low
11/29/00	11:27 AM	37.7		High
11/29/00	6:16 PM		27.5	Low
11/30/00	12:09 PM	36.8		High
11/30/00	9:28 PM		23.6	Low
12/01/00	8:12 AM	29.4		High
12/01/00	5:00 PM		11.8	Low
12/02/00	6:17 AM		10.9	Low
12/02/00	10:06 AM	22.4		High
12/03/00	4:10 AM		17.9	Low
12/03/00	7:39 AM	31.9		High
12/04/00	5:04 AM		20.2	Low
12/04/00	8:26 AM	31.3	<del>-</del>	High
12/05/00	9:40 AM	30.9		High
12/05/00	5:48 PM		19.9	Low
12/06/00	3:48 AM		13.5	Low
			<del>-</del>	

	Nov-00	SUMMARY
	HIGH	LOW
AVG.	31.9	18.9
MAX.	44.3	31.5
MIN.	17.3	5.8

2001	WAIER	YEAR	
TIME	HIGH	LOW	
9:14 AM	26.1		High
4:31 AM		13.0	Low
8:55 AM	27.2		High
7:22 AM	21.5		High
5:36 PM		15.7	Low
8:43 AM	23.1		High
6:47 PM		12.8	Low
6:09 AM	20.4		High
8:52 PM		2.2	Low
6:10 AM			Low
9:30 AM	8.8		High
6:39 AM			High
9:11 PM		4.3	Low
			Low
	12.8	0.0	High
			High
		8.0	Low
	12.5	0.0	High
		3.0	Low
			Low
	17.0	4.7	High
			High
	10.4	-2 N	Low
	9.1	-0.1	Low
	3.1	4.0	High
	19.8	4.0	Low
			High
	10.0	77	High
	21.7	1.1	Low
	21.7	5.0	High
	22.0	5.0	Low
	22.0	0.1	High
	23.8	9.1	Low
	25.0	0.0	High
	10.5	0.0	Low
	19.5	7.0	High
	14.2	7.3	Low
	14.2	77	High
			Low
	20.6	10.7	Low
	20.0	477	High
	24.0	17.7	Low
			High
	27.5	40.0	High
			Low
	00.4	16.3	Low
12:05 PM	30.1		High
	9:14 AM 4:31 AM 8:55 AM 7:22 AM 5:36 PM 8:43 AM 6:47 PM 6:09 AM 8:52 PM 6:10 AM 9:30 AM 6:39 AM	TIME         HIGH           9:14 AM         26.1           4:31 AM         25.5           8:55 AM         27.2           7:22 AM         21.5           5:36 PM         23.1           6:47 PM         6:09 AM           6:09 AM         20.4           8:52 PM         6:10 AM           9:30 AM         8.8           6:39 AM         11.3           9:11 PM         3:40 AM           6:22 AM         12.8           5:37 AM         15.1           4:37 PM         12.5           3:53 PM         17.0           4:13 AM         7:25 AM         17.0           4:17 AM         19.4           9:32 PM         4:35 AM         7:23 AM         9.1           3:03 AM         12:54 PM         19.8           5:41 AM         15.5         6:59 PM           5:23 AM         21.7         5:33 PM           7:53 AM         22.0         7:02 PM           8:07 AM         23.8         9:36 PM           8:18 AM         19.5         8:50 PM           7:07 AM         14.2         1:52 PM           5:43 AM         9:56 AM         28	TIME         HIGH         LOW           9:14 AM         26.1           4:31 AM         13.0           8:55 AM         27.2           7:22 AM         21.5           5:36 PM         15.7           8:43 AM         23.1           6:47 PM         12.8           6:09 AM         20.4           8:52 PM         2.2           6:10 AM         -2.8           9:30 AM         8.8           6:39 AM         11.3           9:11 PM         4.3           3:40 AM         3.5           6:22 AM         12.8           5:37 AM         15.1           4:37 PM         8.0           12:20 AM         12.5           3:53 PM         3.0           4:13 AM         4.7           7:25 AM         17.0           4:17 AM         19.4           9:32 PM         -2.0           4:35 AM         -5.1           7:23 AM         9.1           3:03 AM         4.0           12:54 PM         19.8           5:41 AM         15.5           6:59 PM         7.7           5:23 AM         21.7

Dec-00 SUMMARY

ENERGY WEST MINING COMPANY
EAST MOUNTAIN WEATHER STATION
2001 WATER VEAR

DATE	TIME	HIGH	LOW	
12/30/00	9:52 AM	26.3	1 2011	High
12/30/00	9:40 PM		13.7	Low
12/31/00	9:37 AM	23.7	10.7	High
12/31/00	5:43 PM		11.8	Low
			11.0	LOW
01/01/01	9:21 AM	22.9		High
01/02/01	5:52 AM		9.9	High Low
01/02/01	2:31 PM	26.5	0.0	
01/02/01	6:51 PM	_0.0	15.8	High
01/03/01	12:52 PM	35.5	10.0	Low
01/03/01	6:18 PM	00.0	23.4	High
01/04/01	8:22 AM		23.7	Low
01/04/01	1:09 PM	37.7	20.7	Low
01/05/01	7:17 AM	01.1	25.6	High
01/05/01	10:59 AM	38.4	25.0	Low
01/06/01	12:10 PM	37.1		High
01/06/01	6:52 PM	37.1	22.6	High
01/07/01	8:35 AM		9.2	Low
01/07/01	12:21 PM	23.1	9.2	Low
01/08/01	8:37 AM	23. 1	6.7	High
01/08/01	11:01 AM	19.0	6.7	Low
01/09/01	3:55 AM	19.0	40.7	High
01/09/01	9:42 AM	20.4	10.7	Low
01/10/01	10:36 AM	20. <del>4</del> 19.6		High
01/10/01	3:56 PM	19.0	0.0	High
01/11/01	4:20 AM		9.8	Low
01/11/01	7:45 PM	11.5	11.2	Low
01/12/01	10:55 AM	11.5 15.8		High
01/12/01	8:53 PM	13.6	<b>5</b> 0	High
01/13/01	9:25 AM	11.7	5.9	Low
01/13/01	8:47 PM	11.7	0.0	High
01/14/01	11:09 AM	13.8	8.0	Low
01/14/01	6:51 PM	13.0	0.5	High
01/15/01	10:52 AM	8.7	0.5	Low
01/15/01	7:17 PM	0.7	4.0	High
01/16/01	10:11 AM	7.0	1.3	Low
01/16/01	8:11 PM	7.0	4.4	High
01/17/01	9:46 AM	12.2	-1.4	Low
01/17/01	9:40 AM 9:12 PM	12.2	0.0	High
01/18/01	10:20 AM	15.8	2.9	Low
01/18/01	6:38 PM	13.0	2.0	High
01/19/01	6:42 AM		3.8	Low
01/19/01	9:56 AM	17.0	5.5	Low
01/20/01	10:33 AM	17.8 14.6		High
01/20/01	6:04 PM	14.0	<b>5</b> 0	High
01/20/01	5:31 AM		5.8	Low
01/21/01	11:37 AM	22.7	4.6	Low
0 1/2 1/0 1	11.37 AIVI	23.7		High

HIGH

21.8

31.9

8.8

AVG.

MAX.

MIN.

LOW 9.3

20.2

-5.1

ENERGY WEST MINING COMPANY
EAST MOUNTAIN WEATHER STATION
2001 WATER YEAR

B4==		MAILN	IEAR	
DATE	TIME	HIGH	LOW	
01/22/01	10:39 AM	19.5		High
01/22/01	7:51 PM		8.5	Low
01/23/01	5:45 AM		7.0	Low
01/23/01	10:53 AM	22.7		High
01/24/01	8:31 AM	12.2		High
01/24/01	7:45 PM		8.2	Low
01/25/01	8:14 AM	11.8		High
01/25/01	5:10 PM		1.5	Low
01/26/01	9:33 AM	13.4		High
01/26/01	4:02 PM		2.2	Low
01/27/01	7:37 AM	12.8	2	
01/27/01	8:17 PM		3.0	High
01/28/01	6:34 AM	14.2	0.0	Low
01/28/01	5:15 PM	17.2	2.2	High
01/29/01	12:19 PM	20.3	2.2	Low
01/29/01	8:52 PM	20.5	4.2	High
01/30/01	10:04 AM	6.5	4.2	Low
01/30/01	9:04 PM	0.5	0.4	High
01/31/01	5:21 AM		-2.4	Low
01/31/01	11:01 AM	0.5	-3.4	Low
01/31/01	11.01 AW	9.5		High
02/01/01	2:42 484			
	3:13 AM	04.0	3.5	Low
02/01/01	11:42 AM	21.9		High
02/02/01	7:55 AM		13.0	Low
02/02/01	12:32 PM	27.5		High
02/03/01	12:54 PM	24.0		High
02/03/01	7:30 PM		13.2	Low
02/04/01	5:30 AM		11.2	Low
02/04/01	11:43 AM	32.3		High
02/05/01	11:13 AM	28.9		High
02/05/01	8:25 PM		17.9	Low
02/06/01	5:57 AM		13.6	Low
02/06/01	10:07 AM	23.2		High
02/07/01	11:07 AM	24.9		High
02/07/01	9:27 PM		7.8	Low
02/08/01	10:30 AM	14.1		High
02/08/01	9:28 PM		-2.9	Low
02/09/01	7:45 AM		-9.4	Low
02/09/01	11:18 AM	5.3		High
02/10/01	5:18 AM		-2.6	Low
02/10/01	11:56 AM	8.7		High
02/11/01	8:40 AM	12.6		High
02/11/01	7:37 PM		1.7	Low
02/12/01	4:19 AM		2.4	Low
02/12/01	9:03 AM	13.9	<b>4.7</b>	
02/13/01	9:31 AM	22.0		High
02/13/01	9:01 PM	££.U	7.0	High
	J. J 1 191		7.9	Low

ENERGY WEST MINING COMPANY
EAST MOUNTAIN WEATHER STATION
2001 WATER YEAR

i			WAILIN	LAN	
	DATE	TIME	HIGH	LOW	
	02/14/01	9:37 AM	15.1		High
	02/14/01	10:15 PM		-3.3	Low
	02/15/01	6:39 AM		-3.2	Low
	02/15/01	8:51 AM	16.8		High
	02/16/01	4:53 AM		2.5	Low
	02/16/01	8:41 AM	19.1		High
	02/17/01	3:50 AM		5.0	Low
	02/17/01	10:27 AM	20.7	0.0	
	02/18/01	3:34 AM		10.5	High
	02/18/01	10:10 AM	18.9	10.0	Low
	02/19/01	9:11 AM	25.7		High
	02/19/01	7:54 PM	20.7	11.0	High
	02/20/01	9:09 AM	26.4	11.0	Low
	02/20/01	9:24 PM	20.4	13.6	High
	02/21/01	9:22 AM	25.1	13.0	Low
	02/21/01	8:10 PM	20.1	11.0	High
	02/22/01	8:54 AM	27.9	11.0	Low
	02/22/01	7:54 PM	21.5	11.0	High
	02/23/01	9:14 AM	21.5	11.8	Low
	02/23/01	9:40 PM	21.5	0.7	High
	02/24/01	4:35 AM		3.7	Low
	02/24/01	8:48 AM	15 5	1.9	Low
	02/25/01	7:37 AM	15.5		High
	02/25/01	6:53 PM	20.6		High
	02/26/01	6:08 AM	40.0	5.9	Low
	02/26/01		18.9		High
	02/27/01	5:34 PM	40.7	6.3	Low
	02/27/01	5:18 AM	19.7		High
	02/21/01	7:32 PM	47.0	9.0	Low
	02/28/01	5:35 AM	17.9		High
	02/20/01	8:25 PM		4.6	Low
	02/04/04	0.40.444			
	03/01/01	6:42 AM	22.9		High
	03/01/01	7:57 PM		2.8	Low
	03/02/01	8:54 AM	18.1		High
	03/02/01	7:30 PM		8.6	Low
	03/03/01	6:29 AM	22.2		High
	03/03/01	7:13 PM		6.1	Low
	03/04/01	5:12 AM	24.3		High
	03/04/01	6:28 PM		13.0	Low
	03/05/01	8:44 AM	30.2		High
	03/05/01	8:24 PM		17.3	Low
	03/06/01	7:05 AM	35.2		High
	03/06/01	8:37 PM		19.8	Low
	03/07/01	8:28 AM	24.0		High
	03/07/01	8:39 PM		16.0	Low
	03/08/01	7:59 AM	37.4	-	High
(	03/08/01	8:33 PM		17.9	Low

	Feb-01	SUMMARY
	HIGH	LOW
AVG.	20.3	6.0
MAX.	32.3	17.9
MIN.	5.3	-9.4

2001					
	DATE	TIME	HIGH	LOW	
	03/09/01	5:49 AM	30.1		High
	03/09/01	8:20 PM		15.5	Low
	03/10/01	5:29 AM	23.4		High
	03/10/01	7:04 PM		13.7	Low
	03/11/01	6:32 AM	19.8		High
	03/11/01	6:46 PM		6.8	Low
	03/12/01	7:56 AM	29.1		High
	03/12/01	9:04 PM		8.7	Low
	03/13/01	5:57 AM	31.7		High
	03/13/01	7:58 PM		15.9	Low
	03/14/01	4:21 AM	13.1		High
	03/14/01	8:58 PM		1.3	Low
	03/15/01	6:34 AM	25.2		High
	03/15/01	8:25 PM		6.7	Low
	03/16/01	6:29 AM	17.1		High
	03/16/01	4:05 PM		7.8	Low
	03/17/01	5:03 AM	29.3		High
	03/17/01	4:41 PM		12.4	Low
	03/18/01	4:49 AM	27.5		High
	03/18/01	6:17 PM		17.6	Low
	03/19/01	1:42 AM		16.5	Low
	03/19/01	7:39 AM	36.9		High
	03/20/01	5:26 AM	39.7		High
	03/20/01	9:29 PM		25.5	Low
	03/21/01	3:58 AM	39.8		High
	03/21/01	10:10 PM		23.9	Low
	03/22/01	6:58 AM	37.6		High
	03/22/01	9:14 PM		20.9	Low
	03/23/01	6:20 AM	33.7		High
	03/23/01	6:32 PM		19.8	Low
	03/24/01	3:48 AM	38.5		High
	03/24/01	8:08 PM		23.5	Low
	03/25/01	7:04 AM	40.9		High
	03/25/01	8:07 PM		25.3	Low
	03/26/01	4:40 AM	34.4		High
	03/26/01	9:12 PM		17.5	Low
	03/27/01	6:37 AM	28.1		High
	03/27/01	6:57 PM		16.8	Low
	03/28/01	5:00 AM	25.8		High
	03/28/01	6:50 PM		17.9	Low
	03/29/01	2:23 AM	24.3		High
	03/29/01	6:04 PM		14.6	Low
	03/30/01	4:11 AM	28.9		High
	03/30/01	7:01 PM		16.6	Low
	03/31/01	5:30 AM	35.0		High
	03/31/01	5:12 PM		24.0	Low

	Mar-01	SUMMARY
	HIGH	LOW
AVG.	29.2	15.2
MAX.	40.9	25.5
MIN.	13.1	1.3

ENERGY WEST MINING COMPANY
EAST MOUNTAIN WEATHER STATION
2001 WATER YEAR

2001	WATER	reak	
TIME	HIGH	LOW	
7:13 AM	40.2		High
8:05 PM		23.7	Low
6:50 AM	38.7		High
8:26 PM		18.8	Low
1:37 AM		18.7	Low
12:01 PM	34.4		High
5:19 AM		19.0	Low
1:24 PM	35.0		High
11:27 AM	32.4		High
9:21 PM		18.5	Low
12:22 PM	27.1		High
8:52 PM		16.2	Low
2:19 PM	22.0		High
9:06 PM		9.9	Low
10:08 AM	18.0		High
7:56 PM		5.0	Low
4:13 AM			Low
11:53 AM	28.7		High
10:10 AM	20.5		High
9:56 PM		8.4	Low
5:28 AM		9.5	Low
9:47 AM	30.5		High
6:18 AM	17.3		High
6:43 PM		6.6	Low
		4.7	Low
	28.0		High
		16.8	Low
	31.8		High
		20.2	Low
	43.3		High
		26.0	Low
	47.0		High
		29.7	Low
2:26 PM	53.7		High
2:14 PM	54.3		High
		32.2	Low
	48.0		High
		27.8	Low
	28.0		High
		16.3	Low
	25.4		High
		12.3	Low
	23.2		High
		15.3	Low
		14.1	Low
	36.0		High
5:13 AM		23.1	Low
	7:13 AM 8:05 PM 6:50 AM 8:26 PM 1:37 AM 12:01 PM 5:19 AM 1:24 PM 11:27 AM 9:21 PM 12:22 PM 8:52 PM 2:19 PM 9:06 PM 10:08 AM 7:56 PM 4:13 AM 11:53 AM 10:10 AM 9:56 PM 5:28 AM 9:47 AM 6:43 PM 3:29 AM 1:54 AM 5:43 AM 1:54 AM 5:43 AM 1:50 PM 5:09 AM 4:01 PM 5:09 AM 4:01 PM 5:09 AM	TIME HIGH  7:13 AM 40.2 8:05 PM 6:50 AM 38.7 8:26 PM 1:37 AM 12:01 PM 34.4 5:19 AM 1:24 PM 35.0 11:27 AM 32.4 9:21 PM 12:22 PM 27.1 8:52 PM 2:19 PM 22.0 9:06 PM 10:08 AM 18.0 7:56 PM 4:13 AM 11:53 AM 28.7 10:10 AM 20.5 9:56 PM 5:28 AM 9:47 AM 30.5 6:18 AM 17.3 6:43 PM 3:29 AM 11:54 AM 28.0 5:43 AM 1:20 PM 31.8 5:26 AM 1:20 PM 43.3 5:09 AM 4:01 PM 47.0 5:09 AM 4:01 PM 47.0 5:09 AM 2:26 PM 53.7 2:14 PM 54.3 9:22 PM 12:55 PM 48.0 8:15 PM 11:11 AM 28.0 5:58 PM 8:10 AM 25.4 5:17 PM 10:24 AM 23.2 7:13 PM 4:49 AM 2:28 PM 36.0	TIME         HIGH         LOW           7:13 AM         40.2         8:05 PM         23.7           6:50 AM         38.7         8:26 PM         18.8           1:37 AM         18.7         18.7           12:01 PM         34.4         5:19 AM         19.0           1:24 PM         35.0         11:27 AM         32.4           9:21 PM         18.5         12:22 PM         27.1         8:52 PM         16.2           2:19 PM         22.0         9:06 PM         9.9         10:08 AM         18.0         7:56 PM         5.0         4:13 AM         1.2         11:53 AM         28.7         10:10 AM         20.5         9:56 PM         8.4         9.5         9:56 PM         8.4         9.5         9:54 PM         9.5

DATE	TIME	HIGH	LOW	T
04/24/01	12:23 PM	46.3		High
04/25/01	5:24 AM		28.5	Low
04/25/01	3:54 PM	50.8	_0.0	High
04/26/01	6:14 AM		33.0	Low
04/26/01	2:27 PM	53.8	33.3	High
04/27/01	9:59 AM	48.0		High
04/27/01	8:24 PM		31.4	Low
04/28/01	2:59 AM		28.4	Low
04/28/01	12:37 PM	49.2		High
04/29/01	11:25 AM	45.9		High
04/29/01	7:42 PM		32.9	Low
04/30/01	3:53 AM		29.6	Low
04/30/01	2:39 PM	55.4	_0.0	High
				ı ııgıı
05/01/01	12:45 PM	51.0		High
05/01/01	8:48 PM		30.3	Low
05/02/01	6:40 AM	19.3	33.3	High
05/02/01	8:16 PM		9.3	Low
05/03/01	9:31 AM	18.9		High
05/03/01	6:28 PM		13.6	Low
05/04/01	5:56 AM		14.7	Low
05/04/01	10:51 PM	21.4		High
05/05/01	9:01 AM	30.9		High
05/05/01	9:31 PM		24.4	Low
05/06/01	4:28 AM		23.2	Low
05/06/01	12:37 PM	37.7		High
05/07/01	3:12 AM		27.0	Low
05/07/01	10:17 AM	45.7		High
05/08/01	4:35 AM		32.6	Low
05/08/01	12:23 PM	55.3		High
05/09/01	4:53 AM		39.1	Low
05/09/01	1:01 PM	56.8		High
05/10/01	12:50 PM	54.4		High
05/10/01	8:52 PM		35.0	Low
05/11/01	4:00 AM		31.8	Low
05/11/01	12:58 PM	59.6		High
05/12/01	4:38 AM		38.4	Low
05/12/01	1:54 PM	62.3		High
05/13/01	9:22 AM	54.5		High
05/13/01	9:43 PM		33.8	Low
05/14/01	4:50 AM		30.9	Low
05/14/01	10:29 AM	55.8		High
05/15/01	3:40 AM		38.9	Low
05/15/01	12:56 PM	53.8		High
05/16/01	10:36 AM	49.8		High
05/16/01	9:20 PM		28.6	Low
05/17/01	2:35 AM		27.9	Low

	Apr-01 SUMMARY	
	HIGH	LOW
AVG.	37.1	19.3
MAX.	55.4	33.0
MIN.	17.3	1.2

ENERGY WEST MINING COMPANY
ENERGY WEST MINING COMPANY
EAST MOUNTAIN WEATHER CTATION
EAST MOUNTAIN WEATHER STATION
2001 WATER YEAR
ZVVI WAIER IEAR

DATE	TIME	HIGH	LOW	
05/17/01	7:47 AM	42.3	<u> </u>	High
05/18/01	4:27 AM	44.0		High
05/18/01	7:11 PM		30.6	Low
05/19/01	11:08 AM	48.7		High
05/19/01	8:08 PM		35.2	Low
05/20/01	9:36 AM	46.0		High
05/20/01	9:17 PM		23.5	Low
05/21/01	4:06 AM		19.0	Low
05/21/01	11:40 AM	43.7		High
05/22/01	3:59 AM		34.2	Low
05/22/01	11:49 AM	57.5		High
05/23/01	5:04 AM		38.6	Low
05/23/01	2:15 PM	62.8	33.3	High
05/24/01	6:11 AM		42.2	Low
05/24/01	1:23 PM	62.3		High
05/25/01	5:16 AM		42.6	Low
05/25/01	1:48 PM	62.7	0	High
05/26/01	5:58 AM		43.6	Low
05/26/01	1:53 PM	66.5	.0.0	High
05/27/01	7:17 AM		43.7	Low
05/27/01	1:54 PM	62.9		High
05/28/01	1:10 PM	60.5		High
05/28/01	7:34 PM		40.4	Low
05/29/01	1:40 PM	57.3		High
05/29/01	9:28 PM		38.5	Low
05/30/01	5:33 AM		35.1	Low
05/30/01	11:43 AM	51.7	33.1	High
05/31/01	7:28 AM		37.3	Low
05/31/01	1:17 PM	61.1		High
				9
06/01/01	3:26 AM		39.4	Low
06/01/01	9:49 AM	52.2		High
06/02/01	1:34 PM	67.7		High
06/02/01	6:47 PM		47.9	Low
06/03/01	8:50 AM	60.3		High
06/03/01	10:01 PM		40.9	Low
06/04/01	1:02 PM	51.9		High
06/04/01	9:52 PM		23.9	Low
06/05/01	4:31 AM		18.5	Low
06/05/01	12:03 PM	45.9		High
06/06/01	3:23 AM		30.4	Low
06/06/01	11:03 AM	58.3		High
06/07/01	4:31 AM		39.7	Low
06/07/01	10:29 AM	60.2		High
06/08/01	4:54 AM		43.7	Low
06/08/01	12:10 PM	63.6		High
06/09/01	10:23 AM	65.0		High
				3

	May-01	SUMMARY
	HIGH	LOW
AVG.	50.2	31.7
MAX.	66.5	43.7
MIN.	18.9	9.3

ENERGY WEST MINING COMPANY
ENERGY WEST MINING COMPANY
EAST MOUNTAIN WEATHER STATION
THE MODITION AFFILIER STATION
2001 WATER YEAR
2001 WATER TEAR

	2001 WATER YEAR			
DATE	TIME	HIGH	LOW	
06/09/01	8:44 PM		47.0	Low
06/10/01	3:42 AM		44.5	Low
06/10/01	1:23 PM	67.5		High
06/11/01	1:26 PM	67.1		High
06/11/01	9:15 PM		48.4	Low
06/12/01	12:33 PM	65.6		High
06/12/01	10:18 PM		45.5	Low
06/13/01	10:14 AM	53.1		High
06/13/01	9:15 PM		19.6	Low
06/14/01	2:00 AM		15.6	Low
06/14/01	9:02 AM	34.2		High
06/15/01	2:46 AM		21.9	Low
06/15/01	11:01 AM	49.6		High
06/16/01	3:49 AM		33.7	Low
06/16/01	1:03 PM	60.7		High
06/17/01	3:40 AM		46.2	Low
06/17/01	1:47 PM	70.0		High
06/18/01	4:18 AM		44.6	Low
06/18/01	2:33 PM	69.3		High
06/19/01	11:31 AM	64.1		High
06/19/01	9:37 PM		45.7	Low
06/20/01	2:14 AM		42.6	Low
06/20/01	10:48 AM	66.0		High
06/21/01	4:28 AM		46.3	Low
06/21/01	12:55 PM	66.5		High
06/22/01	1:16 PM	67.2		High
06/22/01	8:30 PM		48.7	Low
06/23/01	1:13 PM	71.1		High
06/23/01	10:12 PM		50.6	Low
06/24/01	10:41 AM	63.9		High
06/24/01	8:21 PM		44.3	Low
06/25/01	2:05 PM	58.2		High
06/25/01	9:13 PM		43.0	Low
06/26/01	3:22 AM		41.2	Low
06/26/01	11:25 AM	63.9		High
06/27/01	4:13 AM	47.0		High
06/27/01	6:12 PM		32.5	Low
06/28/01	1:57 AM		34.0	Low
06/28/01	10:52 AM	57.9		High
06/29/01	3:14 AM		45.4	Low
06/29/01	1:33 PM	70.1		High
06/30/01	5:19 AM		50.3	Low
06/30/01	4:29 PM	74.3		High
07/04/04	0.04 414			
07/01/01	8:31 AM	70 -	49.8	Low
07/01/01 07/02/01	5:04 PM	76.7		High
01102101	6:22 PM	68.2		High

Jun-01	SUMMARY
HIGH	LOW
61.1	39.2
74.3	50.6
34.2	15.6
	HIGH 61.1 74.3

ZUUT WATER YEAR				
DATE	TIME	HIGH	LOW	
07/02/01	10:00 PM		51.6	Low
07/03/01	5:18 AM		46.8	Low
07/03/01	12:56 PM	80.8		High
07/04/01	5:48 AM		60.9	Low
07/04/01	12:54 PM	81.4		High
07/05/01	12:14 AM		59.5	Low
07/05/01	11:17 AM	76.9		High
07/06/01	6:01 AM		52.5	Low
07/06/01	11:54 AM	74.3		High
07/07/01	10:49 AM	68.5		High
07/07/01	8:13 PM		47.9	Low
07/08/01	12:39 PM	72.9		High
07/08/01	6:48 PM		47.2	Low
07/09/01	11:59 AM	66.5		High
07/09/01	7:07 PM		47.7	Low
07/10/01	6:49 AM	57.5		High
07/10/01	6:59 PM		43.4	Low
07/11/01	7:19 AM	57.9		High
07/11/01	7:39 PM		45.5	Low
07/12/01	3:06 AM		45.0	Low
07/12/01	8:46 AM	64.6		High
07/13/01	9:03 AM	63.2		High
07/13/01	6:12 PM		44.4	Low
07/14/01	12:19 PM	55.3	• • • •	High
07/14/01	7:06 PM		38.6	Low
07/15/01	11:04 AM	55.4	55.5	High
07/15/01	8:36 PM		38.8	Low
07/16/01	3:44 AM		41.0	Low
07/16/01	12:01 PM	64.4		High
07/17/01	7:08 AM		40.5	Low
07/17/01	12:27 PM	66.0		High
07/18/01	4:26 AM		44.7	Low
07/18/01	12:48 PM	65.3		High
07/19/01	4:35 AM		48.3	Low
07/19/01	11:57 AM	72.2		High
07/20/01	4:24 AM		48.4	Low
07/20/01	11:59 AM	70.1		High
07/21/01	4:34 AM		48.9	Low
07/21/01	11:30 AM	71.8		High
07/22/01	12:00 PM	72.2		High
07/22/01	7:48 PM		47.8	Low
07/23/01	4:31 AM		48.9	Low
07/23/01	12:06 PM	72.5	, -, -	High
07/24/01	10:32 AM	70.9		High
07/24/01	7:36 PM	-	50.0	Low
07/25/01	9:55 AM	71.6		High
07/25/01	6:29 PM		46.9	Low
			•	

# ENERGY WEST MINING COMPANY EAST MOUNTAIN WEATHER STATION 2001 WATER YEAR

	200	WAIEK	EAR	
DATE	TIME	HIGH	LOW	
07/26/01	10:19 AM	54.7		High
07/26/01	6:08 PM		41.2	Low
07/27/01	1:05 AM		43.9	Low
07/27/01	12:49 PM	69.0		High
07/28/01	5:07 AM		50.0	Low
07/28/01	1:56 PM	73.3		High
07/29/01	12:19 PM	77.8		High
07/29/01	7:27 PM		55.5	Low
07/30/01	9:14 AM	73.0		High
07/30/01	7:42 PM		48.0	Low
07/31/01	2:50 AM		45.0	Low
07/31/01	12:14 PM	68.7		High
				9
08/01/01	5:05 AM		48.0	Low
08/01/01	11:48 AM	71.3		High
08/02/01	3:04 AM		48.1	Low
08/02/01	10:03 AM	67.5		High
08/03/01	2:33 AM		49.7	Low
08/03/01	11:37 AM	69.0		High
08/04/01	3:18 AM		43.0	Low
08/04/01	7:21 AM	52.5	,	High
08/04/01	6:39 PM	46.3		High
08/05/01	2:46 AM		45.0	Low
08/05/01	2:12 PM	69.8		High
08/06/01	12:07 PM		66.2	Low
08/06/01	8:11 PM		53.8	Low
08/07/01	12:52 PM	65.9	33.3	High
08/07/01	7:14 PM		47.2	Low
08/08/01	10:16 AM	59.9		High
08/08/01	8:49 PM	43.9		High
08/09/01	2:35 AM		41.3	Low
08/09/01	11:59 AM	63.1		High
08/10/01	4:44 AM		41.0	Low
08/10/01	10:37 AM	60.8		High
08/11/01	5:39 AM		45.3	Low
08/11/01	12:10 PM	63.5		High
08/12/01	5:26 AM		48.6	Low
08/12/01	11:20 AM	69.3		High
08/13/01	9:04 AM	_	56.4	Low
08/13/01	8:44 PM		38.9	Low
08/14/01	4:01 AM	39.1	99.,9	High
08/14/01	12:57 PM		59.1	Low
08/15/01	12:03 PM	64.4		High
08/15/01	7:24 PM		44.0	Low
08/16/01	10:36 AM	62.8	•	High
08/16/01	8:41 PM	44.3		High
08/17/01	4:18 AM		43.7	Low

	Jul-01	SUMMARY
	HIGH	LOW
AVG.	68.8	47.4
MAX.	81.4	60.9
MIN.	54.7	38.6

ENERGY WEST MINING COMPANY
EAST MOUNTAIN WEATHER STATION
2001 WATER YEAR

	2001	WATER Y	<b>EAR</b>	
DATE	TIME	HIGH	LOW	
08/17/01	11:06 AM	67.7	•	High
08/18/01	4:27 AM		47.9	Low
08/18/01	1:29 PM	70.3	.,,,,	High
08/19/01	9:27 AM		63.4	Low
08/19/01	7:40 PM		46.4	Low
08/20/01	9:55 AM	56.8		High
08/20/01	9:08 PM		39.1	Low
08/21/01	6:40 AM	56.8	00.1	High
08/21/01	6:30 PM	33.3	35.6	Low
08/22/01	8:42 AM	50.9	00.0	High
08/22/01	8:06 PM	30.5	35.7	Low
08/23/01	2:20 AM	35.8	00.7	
08/23/01	11:58 AM	00.0	59.6	High
08/24/01	12:02 PM	62.8	39.0	Low
08/24/01	6:49 PM	44.5		High
08/25/01	3:35 AM	77.0	44.0	High
08/25/01	12:31 PM	68.0	44.0	Low
08/26/01	4:17 AM	00.0	40.0	High
08/26/01	1:18 PM	71.0	48.9	Low
08/27/01	9:51 AM	7 1.0	70.0	High
08/27/01	7:31 PM		70.2	Low
08/28/01	9:27 AM	66.5	51.4	Low
08/28/01	8:31 PM	00.0	40.0	High
08/29/01	10:28 AM	67.0	48.9	Low
08/29/01	6:07 PM	67.9	44.0	High
08/30/01	10:32 AM	E2 7	44.8	Low
08/30/01	4:22 PM	53.7		High
08/31/01	2:15 AM	42.2		High
08/31/01		64.7	39.7	Low
00/3 1/0 1	9:55 AM	61.7		High
09/01/01	4:0E ABA			
09/01/01	4:35 AM	04.5	42.5	Low
	2:05 PM	61.5		High
09/02/01	4:36 AM	05.0	43.6	Low
09/02/01	11:37 AM	65.8		High
09/03/01	4:37 AM	•••	46.9	Low
09/03/01	12:11 PM	68.4		High
09/04/01	2:07 AM		47.8	Low
09/04/01	10:04 AM	69.0		High
09/05/01	12:05 PM	66.9		High
09/05/01	6:57 PM		47.6	Low
09/06/01	3:09 AM	45.6		High
09/06/01	9:02 PM		28.4	Low
09/07/01	9:21 AM	53.1		High
09/07/01	10:12 PM		25.9	Low
09/08/01	5:04 AM		21.2	Low
09/08/01	9:59 AM	46.5		High
09/09/01	6:24 AM		27.0	Low

	Aug-01	SUMMARY
	HIGH	LOW
AVG.	59.0	48.2
MAX.	71.3	70.2
MIN.	35.8	35.6

<b>ENERGY WEST MINING COMPANY</b>	
EAST MOUNTAIN WEATHER STATION	V
2001 WATER YEAR	_

	2001	WATER Y	YEAR	
DATE	TIME	HIGH	LOW	
09/09/01	11:52 AM	54.6		High
09/10/01	5:17 AM		36.3	Low
09/10/01	10:33 AM	62.9		High
09/11/01	4:55 AM		44.6	Low
09/11/01	10:34 AM	66.2		High
09/12/01	10:42 AM	65.9		High
09/12/01	7:10 PM		43.0	Low
09/13/01	8:54 AM	53.1	,	High
09/13/01	7:26 PM		39.4	Low
09/14/01	4:30 AM		40.8	Low
09/14/01	9:09 AM	58.6	.0.0	High
09/15/01	9:18 AM	65.8		High
09/15/01	6:14 PM		43.6	Low
09/16/01	11:54 AM	65.3	.0.0	High
09/16/01	7:08 PM		34.2	Low
09/17/01	8:39 AM	52.9	01.2	High
09/17/01	7:12 PM		34.5	Low
09/18/01	3:40 AM		34.2	Low
09/18/01	9:39 AM	57.8	O-1.2	High
09/19/01	9:39 AM	62.2		High
09/19/01	8:04 PM		42.7	Low
09/20/01	3:39 AM		42.0	Low
09/20/01	9:44 AM	65.7	42.0	High
09/21/01	9:58 AM	64.3		High
09/21/01	8:23 PM		43.6	Low
09/22/01	9:58 AM	68.1	10.0	High
09/22/01	6:42 PM		44.4	Low
09/23/01	3:14 AM		45.0	Low
09/23/01	10:58 AM	67.3	.0.0	High
09/24/01	3:53 AM		45.3	Low
09/24/01	10:55 AM	66.3		High
09/25/01	11:25 AM	69.1		High
09/25/01	8:27 PM		44.8	Low
09/26/01	1:17 PM	67.8		High
09/26/01	7:34 PM		44.6	Low
09/27/01	10:47 AM	65.8		High
09/27/01	7:28 PM		44.5	Low
09/28/01	5:00 AM		42.8	Low
09/28/01	10:24 AM	66.4	0	High
09/29/01	8:42 AM	59.2		High
09/29/01	6:41 PM		40.1	Low
09/30/01	4:16 AM		39.9	Low
09/30/01	11:23 AM	63.8	00.0	High
		· · •		1 11911
10/01/01	5:31 AM		40.8	Low
10/01/01	12:30 PM	65.1		High
10/02/01	9:06 AM	57.8		High
				9.1

	Sep-01	SUMMARY
	HIGH	LOW
AVG.	62.2	40.0
MAX.	69.1	47.8
MIN.	45.6	21.2

# ENERGY WEST MINING COMPANY EAST MOUNTAIN WEATHER STATION 2001 WATER YEAR

DATE	TIME	HIGH	LOW	
10/02/01	7:03 PM		40.1	Low
10/03/01	4:43 AM		42.4	Low
10/03/01	10:37 AM	56.5	74.7	High
10/04/01	2:42 AM	33.3	39.7	Low
10/04/01	7:50 AM	46.9	00.7	High

# 

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

## I. MONITORING LOCATIONS

- **A.** Surface Water Hydrology (see Map HM-1 for East Mountain / Map 7-1 and 7-2 for Trail Mountain locations listed below)
  - 1. Cottonwood Creek Drainage System
    - a. Cottonwood Canyon Creek
      - (1) SW-1 Above Trail Mtn. Mine (Approximately 5000 feet upstream from the inlet culvert for the disturbed area.) 2150 feet South, 2000 feet East of the Northwest corner of Section 24, Township 17 South, Range 6 East.
      - (2) SW-2 Below Trail Mtn. Mine
        (Approximately 200 feet downstream from the outlet culvert for the disturbed area.) 1300 feet South, 1750 feet West of the Northeast corner of Section 25, Township 17 South, Range 6 East.
      - (3) CCC01 USGS Flume:
        (Approximately 7800 feet downstream from the outlet culvert for the disturbed area.)1500 feet North, 200 feet East of the Southwest corner of Section 31, Township 17 South, Range 7 East.
      - (4) SW-3 Below Trail Mtn. Mine
        (Approximately 3800 feet above confluence with Straight
        Canyon) 2400 feet South, 2400 feet East of the Northeast
        corner of Section 6, Township 18 South, Range 6 East.
    - b. Unnamed Drainage off Straight Canyon
      - (1) T-19 (Approximately 200 feet upstream from the from confluence with Straight Canyon) 2500 feet South, 1100 feet East of the Northeast corner of Section 3, Township 18 South, Range 6 East

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

## c. Grimes Wash

- GWR01 Right Fork:
   (Approximately 1500 feet upstream from the inlet culvert for the disturbed area.) 550 feet North, 1500 feet West of the Southwest corner of Section 22, Township 17 South, Range 7 East.
- (2) GWR02 Left Fork:
   (Approximately 50 feet upstream from the inlet culvert for the disturbed area.) 200 feet South, 2350 feet East of the Northwest corner of Section 27, Township 17 South, Range 7 East.
- (3) GWR03 Below the mine:
  (Approximately 500 feet downstream from the outlet culvert below the disturbed area.) 1770 feet South, 1820 feet West of the Northeast corner of Section 27, Township 17 South, Range 7 East.

## 2. Huntington Creek Drainage System

- a. Huntington Creek
  - HCC01 Above Deer Creek Confluence:
     1400 feet north, 2200 feet west of the southeast corner of Section 36, Township 16 South, Range 7 East.
  - (2) HCC02 Below Deer Creek Confluence:300 feet north, 300 feet west of the southwest corner of Section 31, Township 16 South, Range 8 East.
  - (3) HCC03 Below Huntington Power Plant:
     2500 feet north, 1500 feet east of the southeast corner of Section 6, Township 17 South, Range 8 East.
  - (4) HCC04 @ Research Farm\*800 feet north, 200 feet east of the southwest corner of Section 5, Township 17 South, Range 8 East.
  - \* Not listed on map due to scale.

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

## b. Deer Creek

- DCR01 Above the mine:
   (Approximately 600 feet upstream from the mine facility.) 200 feet North, 800 feet West of the Southeast corner of Section 10, Township 17 South, Range 7 East.
- (2) DCR04 Near C1/C2 Belt Intersection:
   (Approximately 5,000 feet downstream from the mine facility.)

   300 feet North, 2000 feet East of the Southeast corner of Section 2, Township 17 South, Range 7 East.
- (3) DCR06 @ Huntington Creek Confluence: (Approximately 15,000 feet downstream from the facility) 1400 feet north, 1100 feet east of the southeast corner of Section 36, Township 16 South, Range 7 East.
- Meetinghouse Canyon South Fork:

   (Approximately 200 feet upstream from the north and south convergence.)
   800 feet North, 1500 feet East of the Southwest corner of Section 35, Township 16 South, Range 7 East.

## d. Rilda Canyon:

- (1) RCF-1 Rilda Canyon Right Fork:
  (Approximately 4000 feet upstream from the Right and Left fork convergence.) 400 feet South, 200 feet West of the Northeast corner of Section 30, Township 16 South, Range 7 East.
- (2) RCLF1 Rilda Canyon Left Fork, below Rilda Canyon Portals: (Approximately 200 feet upstream from the Right and Left fork convergence.) 2400 feet North, 2100 feet West of the Southeast corner of Section 29, Township 16 South, Range 7 East.
- (3) RCLF2 Rilda Canyon Left Fork, above Rilda Canyon Portals: (Approximately 1600 feet upstream from the Right and Left fork convergence.) 1600 feet North, 2300 feet West of the Southwest corner of Section 29, Township 16 South, Range 7 East.

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

- (4) RCF2 Rilda Canyon Above NEWUA springs: 2500 feet South, 400 feet West of the Northeast corner of Section 29, Township 16 South, Range 7 East.
- (5) RCF3 Rilda Canyon Below NEWUA springs: 2550 feet South, 1000 feet East of the Northeast corner of Section 28, Township 16 South, Range 7 East.
- (6) RCW4-Rilda Canyon: (Approximately 1000 feet upstream from the confluence with Huntington Creek.) 850 feet North, 1900 feet West of the Southeast corner of Section 26, Township 16 South, Range 7 East.
- e. Mill Fork Canyon:
  - (1) MFA01 Mill Fork Canyon Above Old Mine: (Approximately 2000 feet above old mine portals @ end of USFS development road.) 100 feet North, 1500 feet West of the Southeast corner of Section 17, Township 16 South, Range 7 East.
  - (2) MFB02 Mill Fork Canyon Above Huntington Creek Confluence: (Approximately 200 feet above confluence with Huntington Creek @ culvert outfall.) 100 feet South, 1900 feet East of the Northwest corner of Section 22, Township 16 South, Range 7 East.
- 3. Reclamation Monitoring: Following stage 1 final reclamation backfilling and grading monitoring will be conducted at points immediately above and below the last sediment pond(s).

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

# B. Groundwater Hydrology

1.	East Mountain Springs (see n	naps HM-4 and HM-5)
	Burnt Tree *	80-41
	Elk Spring *	80-43
	Sheba Springs *	80-44*
	Ted's Tub	80-46*
	79-2	80-47
	79-10 *	80-48
	79-15	80-50
	79-23 *	82-51
	79-24	82-52*
	79-26 *	84-56*
	79-28 (Flag Lake)	89-60(Alpine Spring)
	79-29 *	89-61
	79-32	89-65
	79-34	89-66
	79-35 *	89-67
	79-38	89-68
	79-40	Rilda Canyon-(Meters 2&3)

<sup>\*</sup> Recession Study Springs (Flow August & September)

# 2. Trail Mountain Springs (see Trail Mountain Spring Map 7-1)

T-6

T-8

T-9

T-10

T-14

T-15

T-16

T-18 (Oliphant Mine Discharge)

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

## 3. Piezometric Data

- a. Surface
  - (1) Rilda Canyon (see Map HM-1 for locations)

P1

P5

P6

P7

EM-47

(2) Cottonwood Canyon Creek (see Map HM-1 for locations)

EM-31

CCCW-1A

CCCW-1S

CCCW-2A

CCCW-3A

CCCW-3S U

CCCW-3S L

TM-1B

TM-3

- b. Underground: In-Mine
  - (1) Deer Creek Mine (Refer to Annual Hydrologic Reports for Locations: HM-2)

## 4. In-Mine Water Locations

- a. Deer Creek Mine (Refer to Annual Hydrologic Reports for Locations : HM-2)
- b. Wilberg/Cottonwood Mines (Refer to Annual Hydrologic Reports for Locations: HM-3)
- c. Trail Mountain Mine (Refer to Annual Hydrologic Reports for Locations: PLATE 7-3)
- 5. Waste Rock Wells (see Map HM-1 for locations)
  - a. Deer Creek
  - b. Cottonwood

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

# C. UPDES Monitoring Locations

a. Deer Creek Mine UPDES UT0023604

001- Sediment Pond

002- Mine Discharge

b. Des-Bee-Dove Mines

UPDES UTG040022

001- Sediment Pond

c. Wilberg/Cottonwood Mines

**UPDES UT0022896** 

001- Mine Discharge @ Cottonwood Canyon (TMA)

002- Sediment Pond Discharge @ Cottonwood Canyon

003- Sediment Pond @ Mine Facilities

004- Mine Discharge @ Miller Canyon

005- Sediiment Pond Discharge @ Waste Rock Site

d. Trail Mountain Mine

**UPDES UT0023728** 

001- Sediment Pond

002- Mine Discharge

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

# II. MONITORING SCHEDULE (see enclosed monitoring table)

# A. Field Measurements

Field Measurements collected during quality sampling: Listed below are the sites which will be monitored by PacifiCorp - Energy West in accordance with the guidelines established by DOGM; i.e.,

- Date and Time
- Flow
- pH
- Temperature
- Conductivity
- Dissolved oxygen (perennial streams only)

## **Surface Monitoring**

Surface monitoring locations will be field monitored quarterly for all field parameters.

- 1. Cottonwood Canyon Creek
  - a. (1) SW-1
    - (2) SW-2
    - (3) Cottonwood Canyon Creek USGS Flume
    - (4) SW-3
  - b. Grimes Wash
    - (1) GWR01
    - (2) GWR02
    - (3) GWR03
  - c. Straight Canyon
    - (1) T-19 (Unnamed Side Drainage)

## 2. Huntington Canyon Drainage

- a. Deer Creek
  - (1) DCR01
  - (2) DCR04
  - (3) DCR06

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

- b. Huntington Creek
  - (1) HCC01
  - (2) HCC02
  - (3) HCC04

Flow in Huntington Creek is measured only at HCC01 by Utah Power, and will be reported in the Annual Hydrologic Report.

- c. Meetinghouse Canyon South Fork
- d. Rilda Canyon
  - (1) RCF1\*
  - (2) RCLF 1
  - (3) RCLF 2
  - (4) RCF2
  - (5) RCF3
  - (6) RCW4
  - \* Baseline flow will be measured adjacent to EM-163
- e. Mill Fork Canyon
  - (1) MFA01
  - (2) MFB02

## **Groundwater Monitoring**

- 1. East Mountain Springs (see monitoring location list)
- 2. Trail Mountain Springs (see monitoring location list)

  East/Trail Mountain Springs will be field monitored during the months of July and October. In addition, the East Mountain Recession Study Springs (denoted by asterisks in the Monitoring Location section) and Trail Mountain Springs will be field monitored for flow only from July through October. T-18: Oliphant Mine Discharge, will be collected and analyzed quarterly. Rilda Canyon Springs NEWUA (meters 2 & 3) will be field monitored monthly depending upon access.
- 3. In-Mine
  - a. Deer Creek
  - b. Wilberg/Cottonwood
  - c. Trail Mountain

In-mine locations will be field monitored quarterly for all field parameters except pH, conductivity, and dissolved oxygen.

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

- 4. Piezometric Wells
  - a. Surface

Piezometric surface wells will be field monitored for level only on a monthly basis depending upon access.

(1) Rilda Canyon (see Map HM-1 for locations)

P1

P5

P6

P7

EM-47

(2) Cottonwood Canyon Creek (see Map HM-1 for locations)

EM-31

CCCW-1A

CCCW-1S

CCCW-2A

CCCW-3A

CCCW-3S U

CCCW-3S L

TM-1B

TM-3

- 5. Waste Rock Wells
  - a. Deer Creek
  - b. Cottonwood

## **UPDES Monitoring**

- 1. Deer Creek
- 2. Des-Bee-Dove
- 3. Wilberg/Cottonwood
- 4. Trail Mountain

UPDES sites will be monitored as speicfied in the individual permits.

# **Reclamation Monitoring**

<u>Surface Water Resources:</u> (see enclosed monitoring table)

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

Surface monitoring locations will be field monitored monthly for flow and all field parameters quarterly until bond release.

Ground Water Resources: (see enclosed monitoring table)

Springs East/Trail Mountain Springs will be field monitored during the

months of July and October.

Rilda Canyon Springs NEWUA (meters 2 & 3) will be field monitored monthly for flow depending upon access. East/Trail Mountain Springs (including Rilda Springs and T-18 [Oliphant Mine]) monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division.

Wells: <u>Piezometric surface wells</u> (Rilda Canyon and Cottonwood

Canyon including TM-3 in Straight Canyon): will be field monitored for level only on a monthly basis depending upon access. Piezometric surface well monitoring will be conducted until permit area reduction approval or unless otherwise

approved by the Division.

Waste Rock Wells and TM-1B: will be field monitored for level only on a quarterly basis. Monitoring will be conducted

until sealing during Phase I reclamation.

UPDES: Sites will be monitored as specified in the individual permits

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

- B. Quality Sampling (Laboratory Measurements)
  - 1. Surface Water Hydrology: Water samples will be collected and analyzed quarterly (one sample at low flow and high flow) during the first or second week of the quarter. Parameters analyzed are those listed in the DOGM Guidelines for Surface Water Quality (see Table #1). Quarterly sampling was initiated during March 1988 and will continue throughout the year; i.e., June, September, and December. Baseline analysis was performed in 2001 and will be repeated every five years thereafter.
    - a. Cottonwood Creek Drainage
      - (1)Cottonwood Canyon Creek
        - (a) SW-1
        - (b) SW-2
        - (c) SW-3
      - (2)Grimes Wash
        - (a)GWR01
        - (b)GWR02
        - (c)GWR03
      - (3) Straight Canyon
        - (a) T-19
    - b. Huntington Creek Drainage
      - (1) Deer Creek
        - (a) DCR01
        - (b) DCR04
        - (c) DCR06
      - (2) Huntington Creek
        - (a) HCC01
        - (b) HCC02
        - (c) HCC04
      - (3) Meetinghouse Canyon South Fork: MCH01
      - (4) Rilda Canyon
        - (a) RCF1
        - (b) RCF3
        - (c) RCW4

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

- (5) Mill Fork Canyon
  - (a) MFA01
  - (b) MFB02

Reclamation Monitoring - Surface Water Hydrology: Water samples will be collected and analyzed quarterly (one sample at low flow and high flow) during the first or second week of the quarter. Parameters analyzed are those listed in the DOGM Guidelines for Surface Water Quality (see Table #1). Sampling will be conducted on a quarterly basis until bond release. Baseline analysis will be performed on the 5<sup>th</sup> and 9<sup>th</sup> years following reclamation. In no case will baseline sampling time frame exceed 5 years converting from operational to reclamation monitoring.

## 2. Groundwater Hydrology

- a. East/Trail Mountain Springs: Water samples will be collected and analyzed during the months of July and October. Rilda Canyon Springs (NEWUA: Meters 2 & 3) and T-18 (Oliphant Mine Discharge) will be monitored for quarterly for quality. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table #2).
- b. In-Mine: Two water samples will be collected and analyzed per mine quarterly. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table #2).
- c. Wells: TM-1B will be sampled quarterly. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table #2).
- d. Waste Rock Wells: One water sample will be collected and analyzed per location quarterly. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table #2).

Baseline analysis was performed in 2001 and will be repeated every five years thereafter.

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

## Reclamation Monitoring - Groundwater Hydrology:

- a. East/Trail Mountain Springs: Water samples will be collected and analyzed during the months of July and October. Rilda Canyon Springs (NEWUA: Meters 2 & 3) will be monitored quarterly for quality. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table #2). East/Trail Mountain Springs (including Rilda Springs and T-18 [Oliphant Mine Discharge]) monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division.
- b. In-Mine: Two water samples will be collected and analyzed per mine quarterly until the mine is sealed or the sites become inaccessible. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table #2).
- c. Wells: Well TM-1B will be sealed during Phase I reclamation. Quarterly sampling will continue until sealing. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table #2).
- d. Waste Rock Wells: Waste rock wells will be sealed during Phase I reclamation. One water sample will be collected and analyzed per location quarterly until well sealing. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table #2).
- e. Post Reclamation Monitoring: PacifiCorp commits to conduct annual surveys to identify new discharge locations within and below sealed portals. If discharge occurs, one water sample will be collected and analyzed per location quarterly. Parameters analyzed are those listed in the DOGM Guidelines for Groundwater Water Quality (see Table #2). Baseline analysis will be performed on the 5<sup>th</sup> and 9<sup>th</sup> year.

# 3. UPDES Monitoring Sites

- a. Deer Creek Mine
- b. Des-Bee-Dove Mines
- c. Wilberg/Cottonwood Mines
- d. Trail Mountain Mine

UPDES sites will be monitored as speicfied in the individual permits.

# HYDROLOGIC MONITORING PROGRAM DEER CREEK, WILBERG/COTTONWOOD, DES-BEE-DOVE and TRAIL MOUNTAIN MINES

# III. ANNUAL REPORTS

All data collected regarding the hydrology of East/Trail Mountain will be summarized by the applicant in an annual Hydrologic Monitoring Report. Copies of the report will be submitted to the; U.S. Forest Service; and the Utah State Division of Oil, Gas and Mining. In addition, any raw data collected will be submitted to the Utah State Division of Oil, Gas and Mining on a quarterly basis.

# HYDROLOGIC MONITORING PROGRAM

## TABLE 1

# SURFACE WATER (UPDES Monitoring) BASELINE, OPERATIONAL, POSTMINING WATER QUALITY PARAMETER LIST

## **Field Measurements:**

- \* Water Level or Flow
- \* pH
- \* Specific Conductivity (umhos/cm)
- \* Dissolved Oxygen (ppm) (Perennial Streams Only)
- \* Temperature

## Laboratory Measurements: (mg/l)

- # \* Total Settleable Solids (UPDES Only)
- \* Total Suspended Solids
  - \* Total Dissolved Solids
    - \* Total Hardness (CaCO<sub>3</sub>)
      - Acidity (CaCO<sub>3</sub>)
      - Aluminum (Al) Dissolved
      - Arsenic (As) Dissolved
      - Boron (B) Dissolved (Waste Rock Sites Only)
    - \* Carbonate (CO<sub>3</sub>-2)
    - \* Bicarbonate (HCO<sub>3</sub>)
    - Cadmium (Cd) Dissolved
    - \* Calcium (Ca) Dissolved
    - \* Chloride (Cl<sup>-</sup>)
      - Copper (Cu) Dissolved
    - \* Iron (Fe) Total & Dissolved
      - Lead (Pb) Dissolved
    - \* Magnesium (Mg) Dissolved
    - \* Manganese (Mn) Total & Dissolved
      - Molybdenum (Mo) Dissolved
      - Nitrogen: Ammonia (NH<sub>3</sub>) reported as N
      - Nitrite (NO<sub>2</sub>) reported as N
      - Nitrate (NO<sub>3</sub>-) reported as N
    - \* Potassium (K) Dissolved
    - Oil & Grease (UPDES & Above & Below Mine Sites Only)
      - Ortho Phosphate (PO<sub>4</sub>-3) reported as P
      - Selenium (Se) Dissolved (Waste Rock Sites Only)
    - \* Sodium (Na) Dissolved
    - \* Sulfate  $(SO_4^{-2})$ 
      - Zinc (Zn) Dissolved
    - \* Cation-Anion Balance
    - # Construction
- \* Operational
- Baseline

UTAH DIVISION OIL, GAS AND MININ

## HYDROLOGIC MONITORING PROGRAM

# TABLE 2 GROUND WATER BASELINE, OPERATIONAL, POSTMINING WATER QUALITY PARAMETER LIST

## Field Measurements:

- \* Water Level or Flow
- \* pH
- \* Specific Conductivity (umhos/cm)
- \* Temperature

## Laboratory Measurements: (mg/l)

- \* Total Dissolved Solids
- \* Total Hardness (CaCO<sub>3</sub>)
  - Acidity (CaCO<sub>3</sub>)
  - Aluminum (Al) Dissolved
  - Arsenic (As) Dissolved
  - Boron (B) Dissolved (Waste Rock Sites Only)
- \* Carbonate (CO<sub>3</sub>-2)
- \* Bicarbonate (HCO<sub>3</sub>)
  - Cadmium (Cd) Dissolved
- \* Calcium (Ca) Dissolved
- \* Chloride (Cl<sup>-</sup>)
  - Copper (Cu) Dissolved
- \* Iron (Fe) Total & Dissolved
  - Lead (Pb) Dissolved
- \* Magnesium (Mg) Dissolved
- \* Manganese (Mn) Total & Dissolved
  - Molybdenum (Mo) Dissolved
  - Nitrogen: Ammonia (NH<sub>3</sub>) reported as N
  - Nitrite (NO<sub>2</sub>) reported as N
  - Nitrate (NO<sub>3</sub>-) reported as N
- \* Potassium (K) Dissolved
  - Ortho Phosphate (PO<sub>4</sub>-3) reported as P
  - Selenium (Se) Dissolved (Waste Rock Sites Only)
- \* Sodium (Na) Dissolved
- \* Sulfate  $(SO_4^{-2})$ 
  - Zinc (Zn) Dissolved
- \* Cation-Anion Balance
- \* Operational Baseline

UTAH DIVISION OIL, GAS AND MININ

# HYDROLOGIC MONITORING PROGRAM

## WATER SAMPLE DOCUMENTATION

The following information will be included on the lab sheets:

- 1. Sample time and date
- 2. Individual taking sample
- 3. Field parameters (except in-mine)

Temperature

Flow

pH (units)

Conductivity (umhos/cm)

Dissolved Oxygen (PPM), depending on location

- 4. Precipitation date if applicable
- 5. Date and time each parameter is analyzed at the lab

## ANALYTICAL METHOD AND DETECTION LIMIT

<u>Parameter</u>	MRL	<u>UNITS</u>	Method
Acidity	10	mg/l CaCO <sub>3</sub>	D1067-92
Alkalinity, Bicarbonate	5	mg/l HCO <sub>3</sub>	EPA 310.1
Alkalinity, Carbonate	5	mg/l CO <sub>3</sub> -2	EPA 310.1
Alkalinity, Total	5	mg/l CaCO <sub>3</sub>	EPA 310.1
Aluminum	ĺ	mg/l	EPA 202.1
Anions		meg/l	
Arsenic	.01	mg/l	EPA 206.2
Barium	i	mg/l	EPA 208.1
Boron	.1	mg/l	EPA 212.3
Cadmium	.01	mg/l	EPA 213.1
Calcium	i	mg/l	EPA 215.1
Cations		meg/l	
Chloride	1	mg/l	EPA 300.0
Chromium	0.1	mg/l	EPA 218.1
Conductivity	1	umhos/cm	SM2510-B
Copper	0.1	mg/l	EPA 220.1
Fluoride	0.1	mg/l	SM4500 F-C
Hardness, Total		mg/l CaCO₃	SM2340-B
Iron	0.1	mg/l	EPA 236.1
Iron, Dissolved	0.1	mg/l	EPA 236.1
Lead	0.1	mg/l	EPA 239.1
Magnesium	1	mg/l	EPA 242.1
Manganese	0.1	mg/l	EPA 243.1
Mercury	.0002	mg/l	EPA 245.1
Nickel	0.1	mg/l	EPA 249.1
Nitrogen, Ammonia	0.5	mg/l	EPA 350.3
Nitrogen, Nitrate	0.1	mg/l	EPA 300.0
Nitrogen, Nitrite	0.01	mg/l	EPA 300.0
Oil & Grease	2	mg/l	EPA 413.1
Oxygen, Dissolved		mg/l	EPA 360.1
pH		Units	EPA 150.1
Phosphorus, Total	.05	mg/l	EPA 300.0
Potassium	1	mg/l	EPA 258.1
Selenium	.01	mg/l	EPA 270.2
Sodium	1	mg/l	EPA 273.1
Solids, Settleable	.5	mĬ/l	EPA 160.5
Solids, Total Dissolved	10	mg/l	EPA 160.1
Solids, Total Suspended	5	mg/l	EPA 160.2
Sulfate	5 5	mg/l	EPA 300.0
Sulfide	1	mg/l	EPA 376.1
Turbidity	.1	NŤU	EPA 180.1
Zinc	.01	mg/l	EPA 289.1

UTAH DIVISION OIL, GAS AND MINING

Hyrdology Saitoring Program

PACIFICORP

# ENERGY WEST MINING COMPANY HYDROLOGIC MONITORING PROGRAM

# HYDROLOGIC MONITORING PROGRAM DEER CREEK/COTTONWOOD-WILBERG/DES-BEE-DOVE/TRAIL MOUNTAIN MINES

# SURFACE HYDROLOGY - OPERATIONAL SAMPLING (Table 1)

Drainage System	Drainage	Location	Jan	Feb	Mar	Apr	May	Jun	P.	Aug	Sep	Oct	Nov	Dec
	Cottonwood	SW1	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
	Canyon	SW2	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
	Creek	CCC01	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field
		SW3	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
Cottonwood														
Creek	Grimes	GWR01	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
Drainage	Wash	GWR02	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
System		GWR03	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
	Straight Canyon	T-19	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
	Deer Creek	DCR01 DCR04	Flow	Flow Flow	Operational Operational	Flow	Flow	Operational Operational	Flow Flow	Flow Flow	Operational Operational	Flow Flow	Flow Flow	Operational Operational
		DCR06	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
	Huntington	нсс01	Flow *	Flow *	Operational*	Flow *	Flow *	Operational*	Flow *	Flow *	Operational*	Flow *	Flow *	Operational*
	Creek	HCC02			Operational*			Operational*			Operational*			Operational*
Huntington		HCC04			Operational*			Operational*			Operational*			Operational*
Drainage			* Flow in Hunti	ngton Creek is	* Flow in Huntington Creek is measured @ HCC01 by Utah Power, and will be reported in the Annual Hydrologic Report	01 by Utah Pov	ver, and will be	reported in the Au	ınual Hydrolog	ic Report				
System														
UTAH	Meetinghouse Canyon	MCH01	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational

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# HYDROLOGIC MONITORING PROGRAM DEER CREEK/COTTONWOOD-WILBERG/DES-BEE-DOVE/TRAIL MOUNTAIN MINES ENERGY WEST MINING COMPANY

# GROUNDWATER HYDROLOGY - OPERATIONAL SAMPLING (Table 2)

Groundwater Type	ica.													
			Jan	Feb	Mar	Apr	May	Jun	3	Aug	8	0	Nov	Dec
Springs	East Mountain								Operational	Flow *	Flow *	Operational		
										* Recessic	* Recession Springs			
	East Mountain-Rilda Canyon	ida Canyon	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational	Flow	Flow	Operational
	Trail Mountain								Operational	Flow	Flow	Operational		
In-Mine	Cottonwood				Operational			Operational			Operational			Operational
	Deer Creek				Operational			Operational			Operational			Operational
	Trail Mountain				Operational			Operational			Operational			Operational
	Oliphant	T-18			Operational			Operational			Operational			Operational
Wells	Cottonwood Waste Rock Well	Rock Well			Operational			Operational			Operational			Operational
	Cottonwood Canyon Wells	nn Wells	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
	(includes Straight Canyon TM-3)	Canyon TM-3)												
	Deer Creek Waste Rock Well	Rock Well			Operational			Operational			Operational			Operational
	Deer Creek In-Mine Well	ıe Well			Level			Level			Level			Level
	Rilda Canyon Wells	s,	Level	Level	Level	Level								
	Trail Mountain (TM-1B)	M-1B)	Level	Level	Operational	Level	Level	Operational	Level	Level	Operational	Level	Level	Operational
UPDES SAMPLING - (Table 1)	(G - (Table 1)													
			Jan	Feb	Mar	Apr	May	Jun	II.	Aug	Sep	Oct	Nov	Dec
Mine Water	Cottonwood	WMD01	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
Discharge	i	Miller	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational

			Jan	rep	Mar	Apr	May	one		Aug
Mine Water	Cottonwood	WMD01	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
Discharge		Miller	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
UTAL	Deer Creek	DCD	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
ICC L 1 Div	Trail Mountain	TMD	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
NOISI Sediment Pond	Cottonwood	3 Outfalls	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
O Discharge T	Deer Creek	1 Outfall	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
الال ۲۳۲: 2 الما	Des-Bee-Dove	1 Outfall	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
VF 2001 Gas A	Trail Mtn	1 Outfall	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
	re:									
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# ENERGY WEST MINING COMPANY HYDROLOGIC MONITORING PROGRAM DEER CREEK/COTTONWOOD-WILBERG/DES-BEE-DOVE/TRAIL MOUNTAIN MINES

# SURFACE HYDROLOGY - BASELINE SAMPLING (Table 1) - 2001

Drainage System	Drainage	Location	Jan	Feb	Mar	Apr	May	Jun	- Par	Aug	Sep	징	Nov	Dec
	Cottonwood	SW1	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
	Canyon	SW2	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
	Creek	CCC01	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field
		SW3	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
Cottonwood														
Creek	Grimes	GWR01	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
Drainage	Wash	GWR02	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
System		GWR03	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
	Straight	T-19	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
	Canyon													
	Deer Creek	DCR01	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
		DCR04	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
		DCR06	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
	Huntington	HCC01	Flow *	Flow *	Baseline*	Flow *	Flow *	Baseline*	Flow *	Flow *	Baseline*	Flow *	Flow *	Baseline*
	Creek	HCC02			Baseline*			Baseline*			Baseline*			Baseline*
Huntington		HCC04			Baseline*			Baseline*			Baseline*			Baseline*
Drainage			* Flow in Hunti	ington Creek is 1	measured @ HCC	301 by Utah Pov	wer, and will be	. Flow in Huntington Creek is measured @ HCC01 by Utah Power, and will be reported in the Annual Hydrologic Report	nnual Hydrolog	ic Report				
System														
	Meetinghouse	MCH01	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
	Canyon													
UT.	Rilda	RCF1*	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
AH 	Canyon	RCLF1	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field
D		RCLF2	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field
IVI	K	RCF2	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field	Flow	Flow	Field
SIC		RCF3	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
:3 		RCW4	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline

\* Baseline flow will be measured adjacent to EM-163 Flow Flow Flow Flow Flow RCLF2 RCF3 RCW4 MFA01 MFB02 RCF2 ORPORATEU EFFETTIVE  $\infty P$ H DIVISION OIL, GAS AND MINING

nental/Hydro/Volume9/HYDTABMay2001 File: PCCOMMONEnvironm

# ENERGY WEST MINING COMPANY HYDROLOGIC MONITORING PROGRAM DEER CREEK/COTTONWOOD-WILBERG/DES-BEE-DOVE/TRAIL MOUNTAIN MINES

# GROUNDWATER HYDROLOGY - BASELINE SAMPLING (Table 2) - 2001

Groundwater Type	횗		Jan	Feb	Mar	Apr	May	<u>an T</u>	[i]	Aug	Sep	0	Nov	Dec
Springs	East Mountain								Baseline	Flow *	Flow *	Baseline		
										* Recession Springs	n Springs			
	East Mountain-Rilda Canyon	da Canyon	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline	Flow	Flow	Baseline
	Trail Mountain								Baseline	Flow	Flow	Baseline		
In-Mine	Cottonwood				Baseline			Baseline			Baseline			Baseline
	Deer Creek				Baseline			Baseline			Baseline			Baseline
	Trail Mountain				Baseline			Baseline			Baseline			Baseline
	Oliphant	T-18			Baseline			Baseline			Baseline			Baseline
Wells	Cottonwood Waste Rock Well	Rock Well			Baseline			Baseline			Baseline			Baseline
	Cottonwood Canyon Wells	n Wells	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
	(includes Straight Canyon TM-3)	Canyon TM-3)												
	Deer Creek Waste Rock Well	Rock Well			Baseline			Baseline			Baseline			Baseline
	Deer Creek In-Mine Well	e Well			Level			Level			Level			Level
	Rilda Canyon Wells	5	Level	Level	Level	Level	Level							
	Trail Mountain (TM-1B)	M-1B)	Level	Level	Baseline	Level	Level	Baseline	Level	Level	Baseline	Level	Level	Baseline
UPDES SAMPLING - (Table 1)	[NG - (Table 1)													
			Jan	Feb	Mar	Apr	May	Jun	F	Aug	Sep	8	Nov	Dec
Mine Water	Cottonwood	WMD01	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
Discharge		Miller	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
latU	Deer Creek	DCD	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
H Di	Trail Mountain	TMD	Operational	Operational	Operational	Operational	Operational	Onerational	Onerational	Onerational	Onerational	Onerational	Onerational	Operational
VISIO														
S Seatment Fon	Cononwood	3 Outfails	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
O Discharge	Deer Creek	1 Outfall	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
L,		1 Outfall	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
Gas Ann olin	TED VE	1 Outfall	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational	Operational
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# ENERGY WEST MINING COMPANY HYDROLOGIC MONITORING PROGRAM DEER CREEK/COTTONWOOD-WILBERG/DES-BEE-DOVE/TRAIL MOUNTAIN MINES

# SURFACE HYDROLOGY - RECLAMATION SAMPLING (Table 1)

Principle   Operational   Op	0	ø	Location SW1	<u>Jan</u>	Feb	Mar Operational	Apr	May	Jun Operational	luf.	Aug	Sep Operational	<b>5</b> 0	Nov	Dec Operational
Operational Operational Operational Operational Operational Operational Operational Operational Operational Operational Field Field Field Field Field Operational Operational Field Field Operational Operational Field Field Field Operational Operational Operational Field Field Field Field Field Operational Operational Operational Flow Flow Flow Flow Flow Flow Flow Flo	Creek Creek		SW2 CCC01 SW3			Operational Field Operational			Operational Field Operational			Operational Field Operational			Operational Field Operational
Operational Operational Operational Operational Operational Operational Operational Operational Field Field Field Field Operational Operational Field Field Field Field Operational Operational Field Field Field Operational Operational Operational Operational Field Field Field Field Operational Operational Operational Operational Flow Flow Flow Flow Flow Flow Flow Flo	Grimes		GWR01			Operational			Operational			Operational			Operational
Operational Operational Operational Operational** Operational** Operational** Operational** Operational Field Field Field Operational Field Field Operational Operational Field Field Operational Field Field Operational Operational Field Field Field Operational Field Field Operational Operational Field Field Field Operational Operational Field Field Field Operational Field Field Field Field Operational Field Field Field Field Field Operational Field Field Field Field Field Operational Field Field Field Field Field Field Field Operational Field Fiel	Wash		GWR02			Operational			Operational		•	Operational			Operational
Operational Operational Operational** Operational** Operational** Operational Field Field Field Field Operational Operational Field Field Field Operational Operational Field Field Field Operational Operational Operational Operational Operational Flow Flow Flow Flow Operational Flow Flow Flow Flow Flow Flow Flow Flo			GWR03			Operational			Operational			Operational			Operational
Operational Operational Operational Operational** Operational** Operational Field Field Field Field Operational Operational Field Field Field Operational Operational Field Field Field Operational Operational Operational Operational Operational Operational Flow Flow Flow Operational Flow Flow Flow Flow Flow Flow Flow Flo	Straight Canyon		T-19			Operational			Operational		9	Operational			Operational
Operational Operational** Operational** Operational** Operational Operational Field Field Field Operational Operational Field Field Field Operational Operational Operational Operational Field Field Field Field Field Field Operational Operational Operational Flow Flow Flow Flow Flow Flow Flow Flo	Deer Creek		DCR01			Operational			Operational			Operational			Operational
Operational •• Operational •• Operational •• Operational • Operational Field Field Field Operational Operational Approximately Plow Flow Operational Operational Operational Operational Operational Flow Flow Operational Flow Flow Operational Flow Flow			DCR04			Operational			Operational		Ŭ	Operational			Operational
Operational** Operational** Operational* Operational Field Field Field Operational Operational Field Field Field Field Operational Operational Operational Operational Operational Operational Flow Flow Flow Operational Operational Flow Flow Flow Flow Flow			DCR06			Operational			Operational		J	Operational			Operational
Operational** Operational** Operational Operational Field Field Field Field Operational Operational Field Fi	Huntington		нсс01			Operational**		J	Operational**		ō	perational**		·	Operational**
Operational **  Operational  Operational Field Field Field Field Operational Operational Operational Operational Flow Flow Operational Flow Flow Operational Flow Flow Flow Flow Flow Flow Flow Flo	Creek		HCC02		•	Operational**		0	Perational**		6	perational**		•	Operational**
Operational Field Field Field Field Field Field Operational Operational Operational Operational Thow Flow Operational Flow Flow Operational Flow Flow Operational Flow Flow Operational Flow Flow Operational Flow Flow Operational			HCC04		•	Operational **		J	Derational**		6	perational**		J	Operational**
Operational Field Field Field Field Operational Operational Operational Operational Flow Flow Operational Flow Flow Flow Flow Flow Flow Flow Flo				** Flow in Hunti	ngton Creek is m	easured @ HCC01	by Utah Power	and will be reg	ported in the Annu	ıl Hydrologic Re	pou				
Operational Field Field Field Operational Operational Operational Flow Flow Operational Flow Flow Flow Flow Flow Flow Flow Flo	Meetinghouse		MCH01			Operational			Operational		J	Operational			Operational
Operational Field Field Field Operational Operational Chow Operational Flow Operational Flow Flow Flow Flow Operational Flow Flow Flow	Canyon														
Field Field Field Operational Operational Flow Operational Flow Flow Operational Flow Flow Operational Flow Flow	Rilda		RCF1***			Operational			Operational		J	Operational			Operational
Field Field Operational Operational Thow Operational Flow Flow Operational Flow Flow Operational Flow Operational Flow Operational Flow Operational Flow Operational Flow Operational Flow Operational Flow Operational Flow	Canyon		RCLF1			Field			Field			Field			Field
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Operational  Flow Operational Flow Flow  Operational Flow Flow  Flow Operational Flow Flow			RCF3			Operational			Operational		Ū	Operational			Operational
Flow Operational Flow Flow  Flow Operational Flow Flow			RCW4			Operational			Operational		J	Operational			Operational
Flow Operational Flow Flow  Flow Operational Flow  Flow  Flow				*** Baseline flor	v will be measure	ed adjacent to EM-1	163								
Flow Operational Flow Flow	Mill Fork		MFA01	Flow	Flow	Operational	Flow	Flow	Operational	Flow		Operational	Flow	Flow	Operational
Parameters During the Fifth (5) and Ninth (9) Year After Final Reclamation e sampling time frame exceed 5 years converting from operational to reclamation monitoring.	Canyon		MFB02	Flow	Flow	Operational	Flow	Flow	Operational	Flow		Operational	Flow	Flow	Operational
	alyzed for Baseline 10 case will baselin	line elin	Parameters e sampling t	During the Fi, ime frame exce	ih (5) and Nii ed 5 years co	uh (9) Year Afte nverling from o <sub>l</sub>	r Final Reck perational 10	mation reclamation	monitoring.						

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# ENERGY WEST MINING COMPANY HYDROLOGIC MONITORING PROGRAM DEER CREEK/COTTONWOOD-WILBERGDES-BEE-DOVE/TRAIL MOUNTAIN MINES GROUNDWATER HYDROLOGY - RECLAMATION SAMPLING (Table 2)

Groundwater Type			į		;		;		:		t		;	
Springs	East Mountain				i i	Jak Jak	May		Jui Operational	<b>Y</b>	de	Operational	NON.	3
	Spring monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division East Mountain-Rilda Canyon Flow Operational Flow Flow	be conducted until	permit area reducti Flow	tion approval or t Flow	unless otherwise a	pproved by the Di Flow		Operational	Flow	Flow	Operational	Flow	Flow	Operational
	tolda Spring monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division. Trail Mountain Spring monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division.	g will be conducted be conducted until p	i until permit area i vermit area reducti	reduction approvion ion approval or 1	vermit area reduction approval or unless otherwise approved by the Dii area reduction approval or unless otherwise approved by the Diivision	wise approved by pproved by the Di	the Division. vision.	-	Operational			Operational		
In-Mine	Deer Creek/Cottonwood/Trail Mtn. samples will be collected and analyzed quarterly until the mine is sealed or the sites become inaccessible	nwood/Trail M	tn. samples wil	ll be collected	and analyzed	quarterly un	til the mine i	is sealed or th	e sites becom	e inaccessi	ble			
	Oliphant T-18 Operation Operational Operational Operation Oliphant Mine discharge monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division.	T-18 ge monitoring will b	e conducted until p	rermit area reduc	Operational	unless otherwise a	pproved by the	Operational Division.			Operational			Operational
Wells	Cottonwood Waste Rock Well	e Rock Well			Operational			Operational			Operational			Operational
	Cottonwood Haste Rock Well will sealed during Phase I reclamation. One water sample will be collected and analyzed per location quarterly until well sealing	k Well will sealed d.	uring Phase I recla	ımation. One wa	ter sample will be	collected and ana	lyzed per locati	on quarterly unti	I well sealing					
	Cottonwood Canyon Wells* (includes Straight Canyon TM-3)	on Wells* Canvon TM-3)	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
	Cottonwood Canyon well monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division.	Il monitoring will b	e conducted until p	xermil area redu	ction approval or	unless otherwise a	pproved by the	Division.						
	Deer Creek Waste Rock Well	Rock Well			Operational			Operational			Operational			Operational
	Deer Creek Wasie Rock Well will sealed during Ph	· Well will sealed du	iring Phase I reclai	mation. One wat	iase I reclamation. One water sample will be collected and analyzed per location quarterly until well sealing	collected and anal	yzed per locatio	n quarterly until	well sealing					
	Rilda Canyon Wells*	lls*	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
	Rilda Canyon well monitoring will be conducted until permit area reduction approval or unless otherwise approved by the Division.	itoring will be cond	ucted until permit a	area reduction a	proval or unless	otherwise approve	ed by the Divisio	<b>.</b>						
	Trail Mountain (TM-1B) Level Level Operational Level Operational TA-18 well will sealed during Phase I reclamation. One water sample will be collected and analyzed per location quarterly until well sealing *Monitored monthly subject of access	'M-1B) during Phase I recl bject ot access	Level amation. One water	Level er sample will be	Operational collected and ana	Level lyzed per location	Level quarterly until	Operational I well sealing	Level	Level	Operational	Level	Level	Operational
UPDES SAMPLING - (Table 1)	3 - (Table 1)													
			Jan	Feb	Mar	Apr	May	<u>Jun</u>	Jul.	Aug	Sep	Oct	Nov	Dec
Mine Water	Соцопноод	WMD01	As Needed Basis	According to U.	As Needed Basis According to UPDES Permit Stipulations	ulations					Į	-		
Discharge**		Miller	As Needed Basis	According to U.	As Needed Basis According to UPDES Permit Stipulations	ulations					U'		لمذ	W.
	Deer Creek	a DG	As Needed Basis	According to U	As Needed Basis According to UPDES Permit Stipulations	ulations					rah U		- - - -	<u> </u>
	Trail Mountain TMD As Needed Basis According to UPDES Permit Stipulations ** After Portal Sealing, PacifiCorp Will Monitor Down Dip For Development Of Groundwater Seeps/Springs Until Bond Release	TMD Iling, PacifiCorp	As Needed Basis • Will Monitor	According to U.  Down Dip Fo	As Needed Basis According to UPDES Permit Stipulations Will Monitor Down Dip For Development Of G	ulations 1 Of Groundw	ater Seeps/Sp	orings Until B	ond Release		1419101	VO.	E.P.E.	
Sediment Pond	Cottonwood	3 Outfalls	As Needed Basis	: According to U	As Needed Basis According to UPDES Permit Stipulations	ulations						OII	rina	<u>ا</u> ن د
Discharge	Deer Creek	1 Outfall	As Needed Basis	According to U	As Needed Basis According to UPDES Permit Stipulations	ulations							717 7	h
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